نموذج وصف المقرر

١. اسم المقرر	
مقاومة المواد	
٢. رمز المقرر	
٣. الفصل / السنة	
٢٠٢٣-٢٠٢٤	
٤. تاريخ إعداد هذا الوصف	
٢٠٢٤/٤/٢٩	
٥. أشكال الحضور المتاحة	
٦. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي)	
عدد الساعات الدراسية (الكلي)/ ١٢٠	
٧. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)	
الاسم: احمد ضاعن و سجاد رياض الآيميل : _____	

٨. اهداف المقرر	
اهداف المادة الدراسية	• تعريف الطالب على الاجهاد والانفعال والاجهادات الحرارية وتركز وتغير الأجهاد مع دراسة دائرة مور ومخططات قوة القص وعزم الحني مع الاجهادات الرئيسية في العتبات والالتواء والاستفادة منها كأساس تصميم وفي مجال الاختصاص

٩. استراتيجيات التعليم والتعلم	
الاستراتيجية	١. الأهداف المعرفية
	أ١- يتعرف الطالب على أهم الاجهادات المسلطة على الاجسام في الواقع
	أ٢- يتعرف الطالب على الطرق المتبعة في حساب الاجهادات المختلفة
	أ٣- يتعرف الطالب على التشوهات التي تحصل في الاجسام عند تعرضها للقوى المختلفة
	أ٤- يتعرف الطالب على طرق حساب التشوهات الحاصلة في الاجسام نتيجة الاحمال
	أ٥- يتعرف الطالب على طرق قياس الاجهادات والانفعالات للمواد
	ب - الأهداف المهاراتية الخاصة بالمقرر .
	٢. ان يكون الطالب المتخرج قادرا على ان: -
	ب١- يكتسب الطالب مهارة التفريق بين أنواع الاجهادات المختلفة
	ب٢- يكتسب الطالب مهارة التعرف على المشاكل التي تتعرض لها الاجسام نتيجة الاجهاد

والانفعالات المختلفة

ب٣- يكتسب الطالب مهارة تطبيق الطرق العملية في حساب الاجهادات والانفعالات

٣. طرائق التعليم والتعلم

المحاضرات النظرية

مختبرات علمية

استخدام data show

المحاضرات العلمية

٤. طرائق التقييم

الامتحانات العملية

الامتحانات النظرية اليومية

الواجبات البيتية

الامتحانات الفصلية النهائية

٥. السمنارات

ج- الأهداف الوجدانية والقيمية

ج١- يلتزم بأخلاقيات المؤسسة التعليمية

ج٢- يعمل بروح الفريق

ج٣- يستقبل ويتقبل المعرفة

د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتط
الشخصي).

د١- ينمي مهارات الطالب في المختبرات الهندسية

د٢- يكتسب الطالب مهارات في تصميم المنشات المختلفة

د٣- يكتسب الطالب مهارات في تخطيط وتثبيت المعالم الهندسية

١٠. بنية المقرر					
طريقة التقييم	طريقة التعليم	اسم الوحدة / أو الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
حضور + امتحانات+ واجبات صفية	حضوري نظري + عملي	1- Analysis of deformable bodies: Forces&equilibrium requirements.	حضور الطلبة الى القاعة الدراسية اضافة الى PDF للاستفادة منها في فهم	٢ نظري + ٢ عملي	1
=	=	2- Deformation&comp-atibility conditions. Load-deformation relationships.	=	=	2
=	=	d) Introduction to statically determinate and statically	=	=	3

		indeterminate systems.			
=	=	**2-** Axial force , shear and bending moments: Loading and deformation.	=	=	4
=	=	a) Loading systems and their resultants. b) Shear forces and bending moments by section method.	=	=	5
=	=	Axial force, shear and bending moment diagrams; a direct approach. Differential equations of equilibrium and applications.	=	=	6
=	=	**3-** Stress and axial loads: a) Definition of stress.	=	=	7
=	=	Axial stresses and temperature effects.	=	=	8
=	=	b) Bending stresses in beams.	=	=	9
=	=	Bending stresses in compound sections.	=	=	10
=	=	Bending in nonsymmetrical beams.			11
=	=	Bending in nonsymmetrical beams.	=	=	12
=	=	Shear stresses.	=	=	13
=	=	h) Shear center	=	=	14
=		**4-** Torsion: Torsion for solid-circular sections.	=	=	15
=	=	General application of torsion-torque diagram.	=	=	16
=	=	Strain energy in torsion.	=	=	17
=	=	Torsion for solid non-circular sections.	=	=	18
=	=	Torsion for thin tube	=	=	19

		sections			
=	=	**5- Transformation of stress and strain:** a) Plane stress.	=	=	20
=	=	b) Stress axis transformation- Mohr circle.	=	=	21
=	=	Strain axis transformation.	=	=	22
=	=	**6- Shells**: Thin walled vessels.	=	=	23
=	=	**7- Deflection of beams:** a) limited conditions.	=	=	24
=	=	b) The governing differential equation for deflection of elastic beam	=	=	25
=	=	c) Direct integration method.	=	=	26
=	=	Moment area method.	=	=	27
=	=	Example for deflection	=	=	28
=	=	=	=	=	29
=	=	Example for deflection	=	=	30

١١. تقييم المقرر	
توزيع الدرجة من ١٠٠ على وفق المهام المكلف بها الطالب مثل التحضير اليومي والامتحانات اليومية والشفوية والشهرية والتحريرية والتقارير .... الخ	

١٢. مصادر التعلم والتدريس	
الكتب المقررة المطلوبة (المنهجية أن وجدت)	Strength of materials By Ferdinand l. singer and anddrrew pytel
المراجع الرئيسة (المصادر)	Strength of materials by R.S. khurmi Strength of materials by Rajput Strength of materials by R .subramanian
الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)	الكتب التعليمية الشاملة للمادة
المراجع الإلكترونية ، مواقع الانترنيت	المكتبة الافتراضية, الانترنت والفيديوات التعليمية

Course Description Form

1. Course Name:
Strength of material

2. Course Code:

3. Semester / Year:
2024−2023

4. Description Preparation Date:

5. Available Attendance Forms:
2024/4/29

6. Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (Total) /120

7. Course administrator's name (mention all, if more than one name)
Name: Sajad Read &Ahmed Daan Email:

8. Course Objectives

Course Objectives	☐ Introducing the student to stress, strain, thermal stresses, concentration ar change of stress, studying Moore's circle, shear force diagrams and bend moments, along with the main stresses in beams and torsion, and benefitin
	from them as a basis for design and in the field of specialization.

9. Teaching and Learning Strategies

Strategy	1. Cognitive objectives
	A1- The student learns about the most important stresses placed on bodies in reality
	A2- The student learns about the methods used to calculate different stresses
	A3- The student learns about the deformations that occur in bodies when they ar exposed to various forces
	A4- The student learns about methods of calculating deformations occurring in bodies as a result of loads
	A5- The student learns about methods for measuring stresses and strains of

materials

B - The skills objectives of the course.

2. The graduating student must be able to- :

B1- The student acquires the skill of differentiating between different types of stress

B2- The student acquires the skill of recognizing the problems to which bodies are exposed as a result of various stresses and emotions

B3- The student acquires the skill of applying practical methods in calculating stresses and strains

3. Teaching and learning methods

Theoretical lectures

Scientific laboratories

Use data show

Scientific lectures

4. Evaluation methods

Practical exams

Daily theoretical exams

Homework

Final semester exams

5. Seminars

C- Emotional and value goals

C1- Adheres to the ethics of the educational institution

C2- He works in a team spirit

C3- Receives and accepts knowledge

D - General and qualifying transferable skills (other skills related to employabili and personal development.)

D1- Develops the student's skills in engineering laboratories

D2-The student acquires skills in designing various facilities

D3-The student acquires skills in planning and installing engineering features

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theoretical	Students' attendance in the	3- Analysis of	In presence	presence+ Exams + class

	+ 2 practical	classroom in addition to PDFs for them to benefit from in understanding and comprehending the AutoCAD program.	deformable bodies: Forces&equilibrium requirements.		assignments
2	=	=	4- Deformation&compatibility conditions. Load-deformation relationships.	=	=
3	=	=	d) Introduction to statically determinate and statically indeterminate systems.	=	=
4	=	=	**2-** Axial force , shear and bending moments: Loading and deformation.	=	=
5	=	=	c) Loading systems and their resultants. d) Shear forces and bending moments by section method.	=	=
6	=	=	Axial force, shear and bending moment diagrams; a direct approach. Differential equations of equilibrium and applications.	=	=
7	=	=	**3-** Stress and axial loads: c) Definition of stress.	=	=
8	=	=	Axial stresses and temperature effects.	=	=
9	=	=	d) Bending stresses in beams.	=	=
10	=	=	Bending stresses in compound sections.	=	=

11			Bending in nonsymmetrical beams.	=	=
12	=	=	Bending in nonsymmetrical	=	=

			beams.		
13	=	=	Shear stresses.	=	=
14	=	=	h) Shear center	=	=
15	=	=	**4- Torsion:** Torsion for solid-circular sections.	In presence	=
16	=	=	General application of torsion-torque diagram.	=	=
17	=	=	Strain energy in torsion.	=	=
18	=	=	Torsion for solid non circular sections.	=	=
19	=	=	Torsion for thin tube sections	=	=
20	=	=	**5- Transformation of stress and strain:** c) Plane stress.	=	=
21	=	=	d) Stress axis transformation- Mohr circle.	=	=
22	=	=	Strain axis transformation.	=	=
23	=	=	**6- Shells**: Thin walled vessels.	=	=
24	=	=	**7- Deflection of beams:** d) limited conditions.	=	=
25	=	=	e) The governing differential equation for deflection of elastic beam	=	=
26	=	=	f) Direct integration method.	=	=
27	=	=	Moment area method.	=	=
28	=	=	Example for deflection	=	=
29	=	=	=	=	=

| 30 | = | = | Example for deflection | = | = |

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Strength of materials y Ferdinand l. inger and anddrrew pytel
Main references (sources)	Strength of materials by R.S. khurmi Strength of materials by Rajput Strength of materials by R .subramanian
Recommended books and references (scientific journals, reports...)	Guidebook for Learning
Electronic References, Websites	Comprehensive educational books for Autode programs are available in virtual libraries, or the internet, and through educational videos.