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Project Title: Modernization of Teaching Methodologies in Higher Education: Eu Experience For Jordan And Palestinian Territory

Project acronym: METHODS

Project Number: 561940-EPP-1-2015-1-JO-EPPKA2-CBHE-JP

Funding scheme: Erasmus+ Programme (Capacity-Building projects in the field of Higher Education (E+CBHE))

Start date of the project: 15/10/2015 **Duration:** 36 months

Deliverable title	Course Outline
Author(s)	Eman Abdelhafez
Organisation name(s)	Al-Zaytoonh University of Jordan (ZUJ)
WP Number	5
WP Leader	Birzeit University

Project co-ordinator name, title and organisation:

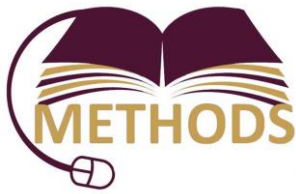
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Al-Zaytoonh University of Jordan (ZUJ)

Faculty of Engineering and Technology

Course title/code	Strength of Materials	0906221
Instructor /office	Eman Abdelhafez	
Semester- Year	Fall- 2017/2018	
Compulsory/Elective	Compulsory	
Prerequisites	Engineering Mechanics	

Course Description	Stress and strain, mechanical properties of materials, thin wall cylinders, bending moment and shear force diagrams; stresses and deformations in members subjected to tension, compression, shear and torsion; flexural and shearing stresses in beams; deflection of beams; combined stresses.
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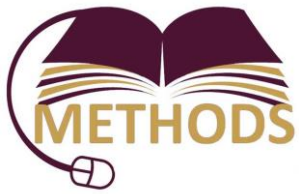
Generic Competences*	An Ability to design systems, components or processes for broadly-defined engineering technology problems appropriate to a program educational objectives.
Specific Competences (SCs)	<ol style="list-style-type: none"> 1. Apply different loading conditions (axial, torsion, bending, and shear) individually or in combinations to structural members. 2. Apply the knowledge of strength of materials on engineering applications and design problems. 3. Analyze and design simple structural members under various loading conditions and imposed constraints.

- These competences related also to the project Methods

	Course Contents	SC1	SC2	SC3	SC4
1	Introduction – Concept of Stress	x			
2	Stress and Strain – Axial Loading	x			
3	Torsion			x	
4	Pure Bending			x	
5	Analysis and design of beams for bending		x		
6	Shearing stresses in beams and thin-walled members		x		
7	Transformations of stress and strain				x

Schedule				
Week	Subject	Activity Description *	Evaluation Criterion	
			Description	%
1	Internal Loading, Reactions, and Stress Definition	Online videos will be assigned for viewing		
2	Average Normal Stress and Average Shear Stress	Online videos will be assigned for viewing		
3	Design of Simple Connections	Online videos will be assigned for viewing		
4	Normal Strain and Shear Strain	Inverted Classroom (Post quizzes)	quiz	5%
5	Mechanical Properties of Materials	Online videos will be assigned for viewing		
6	Axial Deformation	Online videos will be assigned for viewing		
7	Torsion Formula	Online videos will be assigned for viewing		
8	Power	Online videos will be assigned for viewing		
9	Angle of Twist	Inverted Classroom (Post quizzes)	quiz	5%
10	Statically Indeterminate Torsionally Loaded Members	Online videos will be assigned for viewing		
11	Internal Shear and Moment Diagrams	Online videos will be assigned for viewing		
12	Internal Shear and Moment Diagrams	Inverted Classroom (Post quizzes)	quiz	5%
13,14	Transverse Shear	Online videos will be assigned for viewing Inverted Classroom (Post quizzes)	quiz	5%
15,16	Principal Stresses, Max In-plane Shear Stress, Mohr's Circle	Online videos will be assigned for viewing		

* PBL, MOOC, Inverted Classroom should be introduced within activity description



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Textbook and References	Mechanics of Materials, Beer, Johnston & Dewolf, McGraw-Hill Education; 5th edition, 2008.	
Overall Assessment Criteria	Method	Weight [%]
	Quizzes	10
	First Exam	20
	Second Exam	20
	Final Exam	50