Discipline		STRENGTH of MATERIALS code16 3 semester – /winter /		
Specialty		NAVAL ARCHITECTURE and MARINE TECHNOLOGY		
ECTS credits: 7		Form of assessment: EXAM		
Lecturer	Assoc. Prof. Dian Dimitrov Room 807M Phone: +359 52 383 287 E-mail: dm_dimitrov@tu-varna.bg			☺
Department	Mechanics and machine elements			
Faculty	Mechanical eng. and technology			

Learning objectives:

The main goal of the course is acquainting with basic principles and concepts in the area of strength of materials - calculation of stresses and strains, to know about elastically deformable bodies under external loading, calculation of

Strength and stiffness desing of beams, rods, shafts, etc.In the course students get acquainted with the main types of resistance – tension, compression, direct shear, twisting, bending.

CONTENTS:

Training Area	Hours - lectures	Hours - sem exercises	Hours- lab exercises

Introduction to the Strength of materials	4		
Properties of plain sections	2		
Axial loaded members – tensile/compression.Trusses.	4		
Pure torsion	3		
Symmetrical bending	6		
Stress and strain transformation theory	6		
Introduction to failure theories	3		
Stability of compressed columns	2		
STATICS - revision		1	
Calculation of constructions of axial members		2	
Statically undetermined axial members		2	
Shaft torsion calculation		2	
Calculations – internal axial, shear force and bending moments; beam on pin supports; combined bending and torsion; shafts in bending and torsions; compressed rods		8	
Materials behavior under torsion, bending and compression, direct shear			4
Determination of Poisson’s ratio and Young’s module			2
Properties of plain sections			2

Experimental determination of G modulus			2
Beams design; deflection of beams			4
Elastic curve of straight beam			2
Beams and frames – statically indeterminant			4
Plain stress			4
Combined bending and torsion			2
Compressed rods buckling			2
Lab protocols – defending process			2
TOTAL: 75 h	**30**	**15**	**30**