		STUDY MODULE D	ESCRIPTION FORM	I		
Name of the module/subject Structural Mechanics				Code 1010104151010100048		
Field of	study		Profile of study (general academic, practica	Year /Semester		
Civil Engineering First-cycle Studies			(brak) 3 / 5			
Elective path/specialty			Subject offered in: Polish	Course (compulsory, elective obligatory		
Cycle of study:			Form of study (full-time,part-time)			
First-cycle studies			part-time			
No. of h	ours			No. of credits		
Lectur	e: 10 Classes	s: 10 Laboratory: -	Project/seminars:	10 5		
Status o	of the course in the study	program (Basic, major, other)	(university-wide, from another	field)		
		(brak)		(brak)		
				and %)		
Resp	onsible for subje	ect / lecturer:				
- Micł	nał Guminiak. dr inż.					
<u> </u>	ail: michal.guminiak@p	out.poznan.pl				
ema						
tel	+48 61 665 2471					
tel Faci ul. F	+48 61 665 2471 ulty of Civil and Envirc Piotrowo 5 60-965 Poz	nmental Engineering nań				
tel. Faci ul. F	+48 61 665 2471 ulty of Civil and Envirc Piotrowo 5 60-965 Poz equisites in term	nmental Engineering nań s of knowledge, skills an	d social competencies	:		
tel Facı ul. P	+48 61 665 2471 ulty of Civil and Envirc Piotrowo 5 60-965 Poz equisites in term	nmental Engineering nań s of knowledge, skills an 1. Student knows the basic cond	d social competencies	: rminate rod structures.		
ema tel Facu ul. F Prere	+48 61 665 2471 ulty of Civil and Envirc Piotrowo 5 60-965 Poz equisites in term Knowledge	nmental Engineering nań s of knowledge, skills an 1. Student knows the basic cond 2. Student knows the basic cond	d social competencies epts of static of statically dete epts related to the strength of	rminate rod structures. materials.		
ema tel Fac ul. F Prere	+48 61 665 2471 ulty of Civil and Envirc Piotrowo 5 60-965 Poz equisites in term Knowledge	nmental Engineering nań s of knowledge, skills an 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inte	d social competencies epts of static of statically dete epts related to the strength of rnal forces in statically determ	: rminate rod structures. materials. inate rod structures.		
erna tel Facı ul. F Prere	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills	nomental Engineering nań s of knowledge, skills an 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inte 2. Student can calculate the stre	d social competencies epts of static of statically dete epts related to the strength of rnal forces in statically determ ss and strain in the cross sect	rminate rod structures. materials. inate rod structures. ions of bars.		
erna tel Facı ul. F Prere	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social	nomental Engineering nań s of knowledge, skills an 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inte 2. Student can calculate the stree Student is responsible for broug	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ ss and strain in the cross sect ht a basic knowledge of gener	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of		
erna tel Faci ul. F Prere	+48 61 665 2471 ulty of Civil and Envirc Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies	nomental Engineering nań s of knowledge, skills an 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inte 2. Student can calculate the stree Student is responsible for broug materials.	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ iss and strain in the cross sect ht a basic knowledge of gener	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of		
ema tel Faci ul. F Prere 1 2 3 Assu	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj	nomental Engineering nań s of knowledge, skills and 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inte 2. Student can calculate the stree Student is responsible for broug materials. ectives of the course:	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ ss and strain in the cross sect ht a basic knowledge of gener	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of		
erna tel Faci ul. F Prere 1 2 3 Assu Assu Assu	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj edge of the theoretical eements in the plane o tion of stability and dy	 aná s of knowledge, skills an 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inte 2. Student can calculate the stree 2. Student is responsible for broug materials. ectives of the course: models and mechanics flat rod sy f generalized systems framework namics of simple rod systems. 	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ ass and strain in the cross sect ht a basic knowledge of gener	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of e internal forces and nted with the methods of		
erna tel Facı ul. F Prere 1 2 3 Assu Assu Assu Assu	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj edge of the theoretical rements in the plane o tion of stability and dy Study outco	nomental Engineering nań s of knowledge, skills an 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inte 2. Student can calculate the stree Student is responsible for broug materials. ectives of the course: models and mechanics flat rod sy f generalized systems framework namics of simple rod systems. mes and reference to the	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ iss and strain in the cross sect ht a basic knowledge of gener vstems. Learn how to calculate displacement method. Acquai	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of e internal forces and nted with the methods of r a field of study		
erna tel Faci ul. F Prere 1 2 3 Assu Kinsplac calcula	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj edge of the theoretical rements in the plane o tion of stability and dy Study outco vledge:	 aná s of knowledge, skills an 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inte 2. Student can calculate the stree 2. Student can calculate the stree Student is responsible for broug materials. ectives of the course: models and mechanics flat rod sy f generalized systems framework namics of simple rod systems. mes and reference to the 	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ ess and strain in the cross sect ht a basic knowledge of gener vstems. Learn how to calculate displacement method. Acquai educational results fo	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of e internal forces and nted with the methods of r a field of study		
erna tel Facı ul. F Prere 1 2 3 Assu Knowledisplac calcula Knowl displac calcula	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj edge of the theoretical rements in the plane o tion of stability and dy Study outco vledge: ners to create comput	namental Engineering namental Engineering s of knowledge, skills and 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inter 2. Student can calculate the stree Student is responsible for broug materials. ectives of the course: models and mechanics flat rod sy f generalized systems framework namics of simple rod systems. mes and reference to the ational models of flat bar structure	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ iss and strain in the cross sect ht a basic knowledge of gener extems. Learn how to calculate displacement method. Acquai educational results fo es in terms of the method of di	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of e internal forces and nted with the methods of r a field of study splacement [K_W04]		
erna tel Facı ul. F Prere 1 2 3 Assu Knowle displac calcula Knowle displac calcula 1. Man 2. Man	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj edge of the theoretical rements in the plane o tion of stability and dy Study outco vledge: ners to create comput ners to build discrete	namental Engineering namental Engineering s of knowledge, skills and 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inte 2. Student can calculate the stree Student is responsible for broug materials. ectives of the course: models and mechanics flat rod sy f generalized systems framework namics of simple rod systems. mes and reference to the ational models of flat bar structure dynamic models for flat bar structure	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ ass and strain in the cross sect that a basic knowledge of gener vstems. Learn how to calculate displacement method. Acquai educational results fo es in terms of the method of di- ures [K_W04]	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of e internal forces and nted with the methods of r a field of study splacement [K_W04]		
erna tel Faci ul. F Prere 1 2 3 Assu Knowle displac calcula Knowle displac calcula 1. Man 2. Man Skills	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj edge of the theoretical eements in the plane o tion of stability and dy Study outco /ledge: ners to create comput ners to build discrete of ::	namental Engineering namental Engineering s of knowledge, skills and 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inter 2. Student can calculate the stree Student is responsible for broug materials. ectives of the course: models and mechanics flat rod sy f generalized systems framework namics of simple rod systems. mes and reference to the ational models of flat bar structure dynamic models for flat bar structure	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ ass and strain in the cross sect ht a basic knowledge of gener vstems. Learn how to calculate displacement method. Acquai educational results fo es in terms of the method of di ures [K_W04]	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of e internal forces and nted with the methods of r a field of study splacement [K_W04]		
erna tel Faci ul. F Prere 1 2 3 Assu Knowled displac calcula Knowled displac calcula 1. Man 2. Man 2. Man 3 Skills	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj edge of the theoretical mements in the plane o tion of stability and dy Study outco /ledge: ners to create comput ners to build discrete o :: ulate the internal force	namental Engineering namental Engineering s of knowledge, skills and 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inter 2. Student can calculate the stree Student is responsible for broug materials. ectives of the course: models and mechanics flat rod sy f generalized systems framework namics of simple rod systems. mes and reference to the ational models of flat bar structure dynamic models for flat bar structure	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ iss and strain in the cross sect ht a basic knowledge of gener externs. Learn how to calculate displacement method. Acquai educational results fo es in terms of the method of di- ures [K_W04]	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of e internal forces and nted with the methods of r a field of study splacement [K_W04]		
erna tel Faci ul. F Prere 1 2 3 Assu Knowle displac calcula 5 Knowle displac calcula 1. Man 2. Man 2. Man 5 Kills 1. Calc 2. Calc	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj edge of the theoretical rements in the plane o tion of stability and dy Study outco vledge: ners to create comput ners to build discrete of culate the internal force culate the natural vibra e mass distribution	sof knowledge, skills an Sof knowled	d social competencies eepts of static of statically dete eepts related to the strength of rnal forces in statically determ ass and strain in the cross sect that a basic knowledge of gener externs. Learn how to calculate displacement method. Acquai educational results fo es in terms of the method of di- ures [K_W04] the forced vibration harmonical	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of e internal forces and nted with the methods of r a field of study splacement [K_W04]		
erna tel Faci ul. F Prere 1 2 3 Assu Knowled displac calcula 3 Knowled displac calcula 1. Man 2. Man 2. Man 3 Skills 1. Calc 2. Calc discrete Socia	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj edge of the theoretical ements in the plane o tion of stability and dy Study outco vledge: ners to create comput ners to build discrete of culate the internal force ulate the natural vibra e mass distribution	 aná s of knowledge, skills an 1. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the inter 2. Student can calculate the stree 2. Student can calculate the stree Student is responsible for broug materials. ectives of the course: models and mechanics flat rod sy f generalized systems framework namics of simple rod systems. mes and reference to the ational models of flat bar structure dynamic models for flat bar structure is in the frame by the displacemention frequency and amplitude of the [K_U04] 	d social competencies expts of static of statically dete expts related to the strength of rnal forces in statically determ ass and strain in the cross sect ht a basic knowledge of gener vstems. Learn how to calculate displacement method. Acquai educational results fo es in terms of the method of di ures [K_W04] nt method [K_U04] ne forced vibration harmonical	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of e internal forces and nted with the methods of r a field of study splacement [K_W04]		
erna tel Faci ul. F Prere 1 2 3 Knowle displac calcula 5 Kinowle displac calcula 1. Man 2. Man 2. Calc discrete Socia 1. Stud	+48 61 665 2471 ulty of Civil and Enviro Piotrowo 5 60-965 Poz equisites in term Knowledge Skills Social competencies mptions and obj edge of the theoretical ements in the plane o tion of stability and dy Study outco vledge: ners to create comput ners to build discrete of culate the internal force ulate the natural vibra e mass distribution al competencies: lent is responsible for	Instantial Engineering Inań S of knowledge, skills and I. Student knows the basic cond 2. Student knows the basic cond 1. Student can calculate the interest 2. Student can calculate the streest Student is responsible for broug materials. Ectives of the course: models and mechanics flat rod systems framework namics of simple rod systems. mes and reference to the ational models of flat bar structure dynamic models for flat bar structure dynamic models for flat bar structure is in the frame by the displacement tion frequency and amplitude of th [K_U04]	d social competencies expts of static of statically dete expts related to the strength of rnal forces in statically determ ss and strain in the cross sect ht a basic knowledge of gener externs. Learn how to calculate displacement method. Acquai educational results fo es in terms of the method of di- ures [K_W04] nt method [K_U04] ne forced vibration harmonicall s undertaken [K_K02. K_K10	rminate rod structures. materials. inate rod structures. ions of bars. al mechanics and strength of e internal forces and nted with the methods of r a field of study splacement [K_W04]		

Written and oral examination at the end of the semester.

One written tests checking the knowledge and skills in the subject.

Two design exercises for individual solutions.

Course description

Informative and monographic lecture.						
1. Solving framework by the displacement method (transformational formulas, equations, canonical method of displacement						
2. The dynamic loading of the structure, free and forced vibration system with one degree of freedom. The phenomenon of resonance damping. Free and forced vibrations of an n-degrees of freedom.						
3. Determination of influence lines for continuous beams.						
4. Construction of the envelope of the internal forces of the moving load.						
Basic bibliography:						
1. W. Nowacki Mechanika budowli PWN Warszawa 1974						
2. Z. Dyląg i in Mechanika budowli (t.I+II) PWN Warszawa 1989						
3. Z. Cywiński Mechanika budowli w zadaniach (t.I+II) PWN Warszawa 1976						
4. J. Rakowski Mechanika budowli. Zadania część 1 Wydawnictwo PP Poznań 2007						
5. M. Guminiak, J. Rakowski Zbiór zadań z mechaniki budowli Wydawnictwo PWSZ Piła 2008						
6. M. Guminiak, J. Rakowski Mechanika Budowli. Zbiór zadań z elementami ujęcia komputerowego Wydawnictwo PWSZ Piła 2011						
7. W. Nowacki Mechanika budowli PWN Warszawa 1974						
8. Z. Dyląg i in Mechanika budowli (t.I+II) PWN Warszawa 1989	8. Z. Dyląg i in Mechanika budowli (t.I+II) PWN Warszawa 1989					
9. Z. Cywiński Mechanika budowli w zadaniach (t.I+II) PWN Warszawa 1976						
10. J. Rakowski Mechanika budowli. Zadania część 1 Wydawnictwo PP Poznań 2007						
11. M. Guminiak, J. Rakowski Zbiór zadań z mechaniki budowli Wydawnictwo PWSZ Piła 2008						
12. M. Guminiak, J. Rakowski Mechanika Budowli. Zbiór zadań z elementami ujęcia komputerowego Wydawnictwo PWSZ Piła 2011						
Additional bibliography:						
1. Skrypt internetowy, Mechanika Budowli, www.intranet.put.poznan.pl						
2. Skrypt internetowy, Mechanika Budowli, www.intranet.put.poznan.pl						
Result of average student's workload						
Activity	Time (working hours)					
1. Preparation of the first exercise design.	20					
2. Preparation of the second exercise design.	20					
3. Preparation of the first test.	15					
4. Preparation of the second test.	15					
5. Preparation of the exam.	15					

	10			
Student's workload				
Source of workload	hours	ECTS		
Total workload	125	5		
Contact hours	39	2		
Practical activities	42	2		