

## STUDY PROGRAMME CURRICULUM MECHANICAL ENGINEERING

Version (valid from): 2022-2 (01. 10. 2022)

Name of study programme	<b>Mechanical engineering</b>
Programme characteristics	
Type	doctoral
Cycle	doctoral
University of Ljubljana members	• Faculty of Mechanical Engineering, Aškerčeva 6, 1000 Ljubljana, Slovenija

### Year 1

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0033396	Course A		90					160	250	10	1st semester	yes
2.	0033397	Course B		90					160	250	10	1st semester	yes
3.	0033398	Research work						25	225	250	10	1st semester	no
4.	0033399	Course C		90					160	250	10	2nd semester	yes
5.	0033400	Research work						50	325	375	15	2nd semester	no
6.	0033401	Seminar I.						25	100	125	5	2nd semester	no
		Total		270	0	0	0	100	1130	1500	60		

### Year 2

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0033402	Course D		90					160	250	10	1st semester	yes
2.	0138729	Research work						75	425	500	20	1st semester	no
3.	0033405	Research work						75	550	625	25	2nd semester	no
4.	0033406	Doctoral dissertation thesis						25	100	125	5	2nd semester	no
		Total		90	0	0	0	175	1235	1500	60		

## Year 3

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0033407	Research work						100	650	750	30	1st semester	no
2.	0033405	Research work						75	550	625	25	2nd semester	no
3.	0140038	Presentation of research work for doctoral dissertation							125	125	5	2nd semester	no
Total				0	0	0	0	175	1325	1500	60		

## Year 4

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0140039	Research work						100	650	750	30	1st semester	no
2.	0140040	Research work						75	550	625	25	2nd semester	no
3.	0140041	The preparation and defence of doctoral work						25	100	125	5	2nd semester	no
Total				0	0	0	0	200	1300	1500	60		

## Programme elective courses

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0033410	ACOUSTICS AND ULTRASOUND	Jurij Prezelj	90					160	250	10	All-year	yes
2.	0033411	DIFFERENTIAL EQUATIONS	Aljoša Peperko	90					160	250	10	All-year	yes
3.	0033412	EXPERIMENTAL METHODS IN RESEARCH WORK	Drago Bračun, Jože Kutin	90					160	250	10	All-year	yes

4.	0033413	CHAOTIC DYNAMICS	Edvard Govekar	90					160	250	10	All-year	yes
5.	0033414	LINEAR ALGEBRA	Janez Žerovnik	90					160	250	10	All-year	yes
6.	0033415	FINITE ELEMENT AND BOUNDARY ELEMENT METHODS	Nikolaj Mole	90					160	250	10	All-year	yes
7.	0033416	NONLINEAR MECHANICS OF MATERIALS	Miha Brojan	90					160	250	10	All-year	yes
8.	0033417	NEURAL NETWORKS	Edvard Govekar, Primož Potočnik	90					160	250	10	All-year	yes
9.	0033418	NUMERICAL METHODS	Janko Slavič	90					160	250	10	All-year	yes
10.	0033419	COMPUTATIONAL METHODS FOR FLUID DYNAMICS	Božidar Šarler	90					160	250	10	All-year	yes
11.	0033420	NUMERICAL MODELLING OF COUPLED SYSTEMS	Božidar Šarler, Nikolaj Mole	90					160	250	10	All-year	yes
12.	0033421	OPTIMIZATION METHODS	Janez Žerovnik	90					160	250	10	All-year	yes
13.	0033422	SYNERGETICS	Edvard Govekar	90					160	250	10	All-year	yes
14.	0033423	MATERIALS SCIENCE	Roman Šturm	90					160	250	10	All-year	yes
15.	0033424	TURBOMACHINERY THEORY	Marko Hočevar, Mihael Sekavčnik	90					160	250	10	All-year	yes
16.	0033425	PROBABILITY AND MATHEMATICAL STATISTICS	Aljoša Peperko	90					160	250	10	All-year	yes
17.	0033426	APPLIED STATISTICS FOR ENGINEERS	Edvard Govekar	90					160	250	10	All-year	yes

	Total	1530	0	0	0	0	2720	4250	170	
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### Energetical, Process and Environmental Engineering Sciences (direction/track)

#### Direction elective courses

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0033446	ECOLOGY OF WORKING AND LIVING ENVIRONMENT	Matjaž Prek, Uroš Stritih	90					160	250	10	All-year	yes
2.	0033447	EXPERIMENTAL MODELING IN POWER ENGINEERING	Marko Hočevar	90					160	250	10	All-year	yes
3.	0033448	ENHANCED HEAT TRANSFER	Iztok Golobič	90					160	250	10	All-year	yes
4.	0033449	NUMERICAL SIMULATIONS OF PROCESSES IN INTERNAL COMBUSTION ENGINES	Tomaž Ktrašnik	90					160	250	10	All-year	yes
5.	0033450	HEATING AND COOLING	Andrej Kitanovski	90					160	250	10	All-year	yes
6.	0033451	HEAT AND MASS TRANSFER	Andrej Kitanovski	90					160	250	10	All-year	yes
7.	0033452	COMBUSTION THEORY	Andrej Senegačnik, Tomaž Ktrašnik	90					160	250	10	All-year	yes
8.	0033453	THERMAL ENERGETIC ANALYSIS OF PROCESSES	Andrej Senegačnik	90					160	250	10	All-year	yes

9.	0033454	THERMAL POWER SYSTEM	Mihael Sekavčnik	90					160	250	10	All-year	yes
10.	0033455	MULTIPHASE FLOW	Božidar Šarler	90					160	250	10	All-year	yes
Total				900	0	0	0	0	1600	2500	100		

### Constructional and Mechanical Engineering Sciences (direction/track)

#### Direction elective courses

				Contact hours									
	University Course Code	Course title	Lecturers	Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study	Individual student work	Total hours	ECTS	Semesters	Elective
1.	0033427	ACOUSTICAL EMISSION AND NOISE	Jurij Prezelj	90					160	250	10	All-year	yes
2.	0033428	DYNAMICS AND VIBRATIONS	Miha Boltežar	90					160	250	10	All-year	yes
3.	0033429	DYNAMICS OF MULTIBODY SYSTEMS	Miha Boltežar	90					160	250	10	All-year	yes
4.	0033430	ADVANCED EXPERIMENTAL MECHANICS	Janko Slavič	90					160	250	10	All-year	yes
5.	0033431	ENGINEERING OF CONTACT SURFACES	Mitjan Kalin, Roman Šturm	90					160	250	10	All-year	yes
6.	0033432	CHARACTERIZATION OF POLYMERS	Lidija Slemenik Perše	90					160	250	10	All-year	yes
7.	0033434	MECHANISMS	Robert Kunc	90					160	250	10	All-year	yes
8.	0033435	NONLINEAR STRUCTURAL DYNAMICS	Miha Boltežar	90					160	250	10	All-year	yes
9.	0033436	OPERATIONAL STRENGTH	Jernej Klemenc, Marko Nagode	90					160	250	10	All-year	yes

10.	0033438	BUCKLING	Miha Brojan	90					160	250	10	All-year	yes
11.	0033439	TECHNICAL DIAGNOSTICS	Mitjan Kalin	90					160	250	10	All-year	yes
12.	0033440	PRODUCT DATA MANAGEMENT SYSTEM	Jože Tavčar	90					160	250	10	All-year	yes
13.	0033441	ENGINEERING DESIGN THEORY	Roman Žavbi	90					160	250	10	All-year	yes
14.	0033442	THERMOPLASTICITY	Miroslav Halilovič	90					160	250	10	All-year	yes
15.	0033443	THEORY OF VISCOELASTICITY	Lidija Slemenik Perše	90					160	250	10	All-year	yes
16.	0033444	TRANSPORTATION SYSTEMS AND LOGISTIC	Boris Jerman	90					160	250	10	All-year	yes
17.	0033445	TRIBOLOGY	Mitjan Kalin	90					160	250	10	All-year	yes
Total				1530	0	0	0	0	2720	4250	170		

### Production Engineering Sciences, Cybernetics and Mechatronics (direction/track)

#### Direction elective courses

	University Course Code	Course title	Lecturers	Contact hours					Individual student work	Total hours	ECTS	Semesters	Elective
				Lectures	Seminar	Tutorials	Clinical tutorials	Other forms of study					
1.	0033456	SELECTED TOPICS OF THE PRODUCTION SYSTEMS	Janez Kušar, Tomaž Berlec	90					160	250	10	All-year	yes
2.	0033457	SELECTED TOPICS IN TECHNICAL CYBERNETICS	Primož Podržaj	90					160	250	10	All-year	yes
3.	0033458	COMPLEX MECHATRONIC SYSTEMS	Janez Diaci	90					160	250	10	All-year	yes

4.	0033459	LASERS AND LASER APPLICATIONS	Janez Diaci, Matija Jezeršek, Rok Petkovšek	90					160	250	10	All-year	yes
5.	0033460	NON DESTRUCTIVE TESTING OF MATERIALS AND CONSTRUCTIONS	Tomaž Kek	90					160	250	10	All-year	yes
6.	0033461	MACHINE TOOLS	Franci Pušavec	90					160	250	10	All-year	yes
7.	0033462	OPERATIONS RESEARCH	Janez Žerovnik	90					160	250	10	All-year	yes
8.	0033463	OPTIMIZATION OF MACHINING TECHNOLOGIES	Franci Pušavec	90					160	250	10	All-year	yes
9.	0033464	NONCONVENTIONAL MACHINING PROCESSES	Joško Valentinčič	90					160	250	10	All-year	yes
10.	0033465	MACHINING PROCESSES	Franci Pušavec	90					160	250	10	All-year	yes
11.	0033466	MATERIAL FORMING PROCESSES	Tomaž Pepelnjak	90					160	250	10	All-year	yes
12.	0033467	WELDING PROCESSES	Damjan Klobčar	90					160	250	10	All-year	yes
13.	0033468	COMPUTER INTEGRATED MANUFACTURING AND WORK SYSTEMS CIM/FMS	Rok Vrabič	90					160	250	10	All-year	yes
14.	0033469	QUALITY SYSTEMS	Drago Bračun	90					160	250	10	All-year	yes
15.	0033470	SYSTEMS OF PRODUCTION PLANNING AND CONTROL	Janez Kušar, Tomaž Berlec	90					160	250	10	All-year	yes
16.	0033471	CONCURRENT ENGINEERING	Janez Kušar,	90					160	250	10	All-year	yes

			Tomaž Berlec										
17.	0033472	INTELLIGENT HANDLING AND ASSEMBLY SYSTEMS	Niko Herakovič	90					160	250	10	All-year	yes
18.	0033473	HEAT TREATMENT AND SURFACE TREATMENT OF MATERIALS	Roman Šturm	90					160	250	10	All-year	yes
19.	0033474	WELDING, CUTTING AND SURFACING WITH HIGH ENERGY DENSITY	Damjan Klobčar	90					160	250	10	All-year	yes
Total				1710	0	0	0	0	3040	4750	190		