SULABUS

Basic data of the subject	
Academic unit:	**Faculty of Engineering and Informatics**
Title of the subject:	**Modern Engineering Materials**
Level:	**Master**
Course Status:	**Core**
Year of studies:	**I**
Number of hours per week:	**3**
Value of Credits - ECTS:	**6**
Time / location:	
Course lecturer:	**Mr.Sc. Fatmir Çerkini**
Contact details:	**fatmir.cerkini@ushaf.net**
Course Description	*This course will equip students with knowledge of engineering materials in general with a special focus on modern (composite) materials used today in the industry.*
Objectives of the course:	*Through this subject students will identify and recognize advanced modern engineering materials and understand the features and performance of their parameters.*
Expected learning outcomes:	*Upon successful completion of this subject, student will be able to:* • *Understand the mechanics of engineering materials* • *analyse the physical and chemical properties of materials including metals, ceramics, polymers and their contents* • *analyse the processes of obtaining these materials* • *appreciate the possibilities of applying modern materials instead of traditional ones*

Contribution to the student load (which must correspond with learning outcomes)			
Activity	**Hour**	**Day/Week**	**In total**
Lectures with exercises	3	15	45
Internship	2	7	14
Contacts with teacher / consultations	2	4	8
Field exercises			
Midterm, seminars and projects.	20		20
Homework			
Self-learning time student (at the library or at home)	3	15	45
Final preparation for the exam	15		15
Time spent on evaluation (tests, quiz and final exam)	1	2	2
Projects and presentations.	1		1
Total			**150**

Teaching methodology:	*Lectures combined with practical and laboratory work*

Assessment methods:	*First written evaluation:* *25%* *Second written evaluation:* *30 %* ***Attendance and engagement:*** ***5 %*** ***Homework (Workshop):*** ***40 %*** ***Final exam:*** ***55 %*** *Total:* ***100 %***
Literature	
Basic Literature:	1. N.Boshnjaku ,,NJOHURI MATERIALESH TË MAKINERISË",
Additional Literature:	*1. Casey Keulen ,,Composite Materials"* *2. Ray Fernando,PhD ,,Nanotechnology and nanomaterials", California Polytechnic University*
The ratio of theory and practice	*60% theory with numerical exercises and 40% laboratory work.*

Designed learning plan	
Week:	**Lectures and exercises to be held**
Week one:	*Chemical bonding of materials*
Week two:	*crystalline and amorphous structures*
Week three:	*Deformation of materials*
Week four:	*Chemical, optical and magnetic properties of materials*
Week five:	*Strong alloys and metal-ceramic materials*
Week six:	*Modern engineering materials* *Instructions for homeworks. Separating them*
Week seven:	*First written evaluation*
Week eight:	*Nanomaterials*
Week nine:	*Polymers and Biomaterials*
Week ten:	*composites and super-strength materials*
Week eleven:	*Permanent magnetic materials*
Week twelve:	*Superconductors and Semiconductors*
Week thirteen:	*Smart materials*
Week fourteen:	*Clean energy materials*
Week fifteen:	*Submission of seminar papers(homework)* *Second written evaluation*

Academic policies and rules of conduct
Regular attendance of lectures and exercises is necessary, as well as active participation with discussion and solution of tasks. Not impeding the progress required for learning using mobile phones turned off or in silent mode.