

# Transilvania University of Braşov, Romania

## Study program: Biomaterials Engineering

Faculty:	Materials Science and Engineering Faculty
Study period:	4 years (bachelor)
Academic year structure:	2 semesters (14 weeks per semester)
Examination sessions (two):	winter session (January/February) summer session (June/July)

### Courses per years

#### 1<sup>st</sup> Year

No. crt.	Course	Code	Semester I					Semester II				
			C	S	L	P	Cred	C	S	L	P	Cred
01	Mathematical Analysis	SMAMA1	3	1			4					
02	Computer Programming and Programming Languages	SMPRG1	3		2		6					
03	Descriptive Geometry	SMGDE1	2	1			4					
04	Materials Science	SMSMM	2	1	1		5					
05	General Chemistry	SMCGB1	2	1	2		5					
06	Mechanics	SMMEC	2	1			4					
07	Materials physic	SMFIZ1						2	1	1		4
08	Linear Algebra, Analytical Geometry and Differential Equations	SMALG1						2	1			5
09	Numerical Methods	SMMEN1						2		1		4
10	Introduction in Bioengineering	SMIBI						2	1			4
11	Management in engineering	SMASE1						1	2			4
12	Techniques of communication and intellectual property (optional)	SMTCP1										4
	Elements of biology(optional)	SMEBI						2	1			
13	Technical Drawing	SMDEST						1		2		3
14	Foreign Language: English	LE01/LE02	1	1			2	1	1			2
15	Physical Training	EF01/EF02		1			1		1			1

#### 2<sup>nd</sup> Year

No. crt.	Course	Code	Semester III					Semester IV				
			C	S	L	P	Cred	C	S	L	P	Cred
01	Special Mathematics	SMMSP	2	1			3					
02	Strength of Materials	SMRM	2	1	1		4					
03	Physical Chemistry	SMCHFZ	2	1	1		5					
04	Fluid Mechanics	SMMF	2	1			3					
05	Applied Informatics	SMINFA	1	2			4					
06	Material properties	SMPMMT	2	1	1		5					
07	Probability Theory and Mathematical Statistics	SMTPSM	1	2			4					
08	Biocompatible materials	SMBIO						4		3		8
09	Biomolecules and biopolymers	SMBB						2	1	2		5

10	Electrotechnics	SMETH						2		1		4
11	Microscopy and Image Analysis	SMMAI						2	1	1		5
12	Marketing	SMMK						2	1			4
13	Practical Activity I (90 hours)	SMPRS2										2
14	Foreign Language: English	LE03/LE04	1	1				2	1	1		2
15	Physical Training	EF03/EF04		1				1		1		1

### 3<sup>rd</sup> Year

No. crt.	Course	Code	Semester V					Semester VI					
			C	S	L	P	Cred	C	S	L	P	Cred	
01	Medical Imaging	SMIMG						2	1	2			7
02	Prostheses	SMPROT	2		1	2	6						
03	Heat Treatment	SMTT	2		2		5						
04	Elaboration and Casting alloys	SMELAB	4	1	2		8						
05	Biocompatibility	SMBIC						3	1	1			5
06	Computer aided design	SMPAC						2		1	2		5
07	Cutting processing	SMPAB	2		2	1	6						
08	Cardiovascular implants	SMIC						2		2			5
09	Materials for biosensors	SMBIOS						2		2			3
10	Techniques of advanced analysis of biomaterials (optional)	SMTAAB						2		2			4
	Dental implants (optional)	SMID											
11	Project Management (optional)	SMMPRO	2	2			4						
	Value Analysis (optional)	SMAV											
12	Practical Activity II (90 hours)	SMPRS3											2

### 4<sup>th</sup> Year

No. crt.	Course	Code	Semester VII					Semester VIII					
			C	S	L	P	Cred	C	S	L	P	Cred	
01	Quality Management	SMMCAL	2		1		4						
02	Biotribology	SMBTRI	2	1	2		6						
03	Processing by plastic deformation	SMBTDPL	2		1	2	6						
04	Nanomaterials and nanotechnologies	SMNANO	3			2	6						
05	Engineering surfaces	SMIS						4		2	2		5
06	Corrosion and protection bio-materials	SMCORZ						2	1	2			5
07	Biomimetic materials	SMBMI						2		2			5
08	Modelling and optimization of the technological processes	SMMOP						2	2				5
09	Powder Processing for biomaterials (optional)	SMPP	3		2		4						
	Intelligent biomaterials (optional)	SMMINT											
10	Ecotechnology (optional)	SMECOL	2	2			4						
	Virtual instrumentation for biomaterials (optional)	SMINVR											
13	Bases of Experimental Research (optional)	SMBCE											4
14	Entrepreneurship (optional)	SMANTR						2	2				
15	Practical Activity III (60 hours)	SMPRS4											2
16	Research for the Diploma Project (104 hours)	SMPPD4											4