

Program of Materials Science and Engineering for International Students (2019)

I. Introduction

The major of Materials Science and Engineering is a discipline, which systematically studies fundamental theories and experiment skills for materials science and engineering as well as applies these knowledge/abilities for materials' syntheses, preparation, structure characterization/evaluation, and performance controlling in various broad fields based on the principles of materials science, chemistry, and physics. Materials Science and Engineering major is an integrated discipline for application science closely related to engineering technology.

Materials are the bases for human survival and development. In 1970s, people viewed information, materials and energy as the mainstay of social civilization. In 1980s, with the rise of high technologies, materials science, information technology, and biotechnology were listed as important symbols of new technology revolution. Nowadays, materials have become important parts of the national economy, national defense and people's livelihood.

II. Objectives and Learning Outcomes

Materials Science and Engineering (MSE) will cultivate high-quality science and technology talents with firm theory knowledge of Materials Science and Engineering, abilities of mastering frontier materials' R&D and characterization technology, and capabilities of utilizing English and computer technology very well for high-tech R&D in interdisciplinary fields. These trained students possess not only the capability for researching in their disciplines and related fields, for designing and developing new materials, for teaching and managing, but also for practice innovation, cooperation, and leadership. These graduates can not only engage in conventional material industrial production, new materials creation, and development of new processes and technologies, but also continue their postgraduate studies in Materials Science and Engineering and serve in the research, development and management in top-ranked corporations, scientific research institutes, colleges, and government.

III. Study Length and Degree Requirements

Study length: 4 years

Degree conferred: Bachelor of Materials Science and Engineering

The minimum credit requirement for graduation: 137 credits (not including English courses);

Category	Module	Minimum Credit Requirement
General Education (GE) Required Courses (49 credits)	Science	29
	Physical Education	4
	Chinese Languages & Culture	16
General Education (GE)	Humanities	4

Elective Courses (10 credits)	Social Sciences	4
	Arts	2
	Science	0
Major Course (78 credits)	Major Foundational Courses	44
	Major Core Courses	13
	Major Elective Courses	7
	Research Projects, Internship and Undergraduate Thesis / Projects	14
Total (not including English courses)		137

* Percentage of the total= Credit requirements of each line / Total credit requirements.

IV. Discipline

Materials Science and Engineering

V. Main Courses

Fundamentals of Circuits and Electronics, Fundamentals of Materials Science and Engineering, Experiments for Fundamentals of Materials Science and Engineering, CAD Engineering Drawing, Crystallography, Physical Chemistry, Physical Chemistry Experiments, Mechanics of Materials B, Materials Chemistry, Probability and Statistics, Comprehensive Experiments of Materials I/ II, Experiments for Advanced Materials Science and Engineering I/ II, Physics of Materials, Material Characterization Techniques, Polymer materials, Metal Materials, Ceramic Materials.

VI. Practice-Based Courses

Main practical teaching includes: experiments, industrial practice (Summer break of Grade 3), thesis, undergraduates' innovation experiments (starting from Year 2, undergraduates with excellent scores can work in labs to conduct research under the guidance of their supervisors; research period can include Summer break), and various academic and overseas undergraduate competitions.

VII. Pre-requisites for Major Declaration

Major Declaration Time	Course Cod	Course Name	Prerequisite
Declare major at the end of First Year	MA101B	Calculus I A	None
	MA102B	Calculus II A	MA101B
	MA107B	Linear Algebra B	None
	PHY103B	General Physics I B	None
	MSE102	Frontier Seminars in Materials Science and Engineering	None
	PHY105B	General Physics II B	PHY103B
	PHY104B	Experiments of Fundamental Physics	None
	CH101A	General Chemistry A	None
	Notes: At least 6 of the above courses will be completed in the first year, and the results should be qualified, and also the Frontier Seminars in Materials Science and Engineering must be completed.		
Declare major at the end of Second Year	MA101B	Calculus I A	None
	MA102B	Calculus II A	MA101B
	MA107B	Linear Algebra B	None
	MSE102	Frontier Seminars in Materials Science and Engineering	None
	PHY103B	General Physics I B	None
	PHY105B	General Physics II B	PHY103B
	PHY104B	Experiments of Fundamental Physics	None
	CH101A	General Chemistry A	None
	CS102B	Introduction to Programming B	None
	MSE001	Fundamentals of Materials Science and Engineering	PHY105B CH101A
	MSE002	Experiments for Fundamentals of Materials Science and Engineering	PHY105B CH101A
	Notes: 1. All of the above courses should be completed, and the results should be qualified. 2. At least earn 13 credits in the following courses: CAD Engineering Drawing, Fundamentals of Circuits and Electronics, Analog Circuit Laboratory, Crystallography, Probability and Statistics, Physical Chemistry, Physical Chemistry Experiments, Mechanics of Materials B, Polymer materials, Materials Characterization Techniques.		

VIII. Requirements for GE Required Courses

(I) Science Module

Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	Language Instruction	Prerequisite	Dept
MA101B	Calculus I A	4		4	1/Fall	E	None	MATH
MA102B	Calculus II A	4		4	1/Spr	E	MA101B	MATH
MA107B	Linear Algebra B	4		4	1/Fall	E	None	MATH
PHY103B	General Physics I B	4		4	1/Fall	E	None	PHY
PHY105B	General Physics II B	4		4	1/Spr	E	PHY103B	PHY
CH101A	General Chemistry A	4		4	1/Spr or Fall	E	None	CHEM
CS102B	Introduction to Programming B	3	1	4	1/Spr or Fall	E	None	CSE
PHY104B	Experiments of Fundamental Physics	2	2	4	1/Spr or Fall	E	None	PHY
Total		29	3	32				

(II) Physical Education

Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	Language Instruction	Prerequisite	Dept
GE131	Physical Education I	1		2	1/Fall	C	NA	PE Center
GE132	Physical Education II	1		2	1/Spr	C	NA	
GE231	Physical Education III	1		2	2/Fall	C	NA	
GE232	Physical Education IV	1		2	2/Spr	C	NA	
Total		4		8				

(III) Chinese Languages & Culture

Course Code	Course Name	Credit	Hours/week	Term	Language Instruction	Prerequisite	Dept
CLE008	Elementary Chinese I	2	4	1/Fall	B	NA	CLE
CLE009	Elementary Chinese II	2	4	1/Spr	B	CLE008	

CLE027	Intermediate Chinese I	2	4	2/Fall	B	CLE009	CLE/ HUM / SSC
CLE028	Intermediate Chinese II	2	4	2/Spr	B	CLE027	
CLE031	Advanced Chinese I	2	4	3/Fall	B	CLE028	
CLE032	Advanced Chinese II	2	4	3/Spr	B	CLE031	
CLE033	Chinese Culture	2	2	Spr/Fall	B/E	NA	
CLE034	Chinese History	2	2	Spr/Fall	B/E	NA	
Total		16	28				

(IV) English Language

All students are required to undertake the English Placement Test before selecting courses, based on which students will be assigned to 3 levels to be ready for the courses with English as the instruction language.

SUSTech English III, English for Academic Purposes are required for Level A.

SUSTech English II, SUSTech English III, English for Academic Purposes for Level B.

SUSTech English I, SUSTech English II, SUSTech English III, English for Academic for Level C.

Course Code	Course Name	Credit	Hours/week	Instruction Language	Prerequisite	Dept
CLE021	SUSTech English I	4	4	E	NA	CLE
CLE022	SUSTech English II	4	4	E	CLE021	
CLE023	SUSTech English III	4	4	E	CLE022	
CLE030	English for Academic Purposes	2	2	E	CLE023	

IX Requirements for GE Elective Courses

Students are required to complete 4 credits for the Humanities Module and Social Sciences Module respectively, and 2 credits for the Music and Art Module. (Information about the available courses and the instruction language will be announced before the course selection session)

X. Major Course Arrangement

Table 1: Major Required Course (Foundational and Core Courses)

Course Category	Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	take the course Advised term to	Instruction language	Prerequisite	Dept.
Major Foundational Courses	MSE102	Frontier Seminars in Materials Science and Engineering	1		1	Spr/ Fall	1/Fall	B	None	MSE
	ME102	CAD Engineering Drawing	3	1.5	5	Spr	1/Spr	E	None	ME
	MSE205	Fundamentals of Circuits and Electronics	3		3	Fall	2/Fall	E	MA102B MA107B PHY105B	MSE
	EE201-17 L	Analog Circuit Laboratory	1	1	2	Fall	2/Fall	E	MSE205	EE
	MSE001	Fundamentals of Materials Science and Engineering*	3		3	Spr/ Fall	2/Fall	E	PHY105B CH101A	MSE
	MSE002	Experiments for Fundamentals of Materials Science and Engineering*	1	1	2	Spr/ Fall	2/Fall	E	PHY105B CH101A	MSE
	MSE203	Crystallography	2		2	Fall	2/Fall	E	MA102B MA107B PHY105B	MSE
	MA212	Probability and Statistics	3		3	Spr/ Fall	2/Fall	E	MA102B	MA
	MSE202	Physical Chemistry*	3		3	Spr	2/Spr	E	MA102B CH101A	MSE
	MSE204	Physical Chemistry Experiments*	1	1	2	Spr	2/Spr	E	MA102B CH101A	MSE
	MSE213	Mechanics of Materials B	3		3	Spr	2/Spr	E	MSE001 MSE002	MSE
	MSE306	Materials Characterization Techniques	3		3	Spr	2/Spr	E	MSE001 MSE002	MSE
	MSE301	Materials Chemistry	3		3	Fall	3/Fall	E	MSE001 MSE002	MSE
	MSE347	Seminars Frontiers of Modern Materials Science and Technology	1		1	Fall	3/Fall	B	MSE001 MSE002	MSE
	MSE307	Comprehensive Experiments of Materials I	4	4	8	Fall	3/Fall	E	MSE203 MSE213	MSE
	MSE345	Experiments for Advanced Materials Science and Engineering I	1	1	2	Fall	3/Fall	E	MSE002	MSE
	MSE346	Experiments for Advanced Materials Science and Engineering II	1	1	2	Spr	3/Spr	E	MSE345	MSE

	MSE304	Comprehensive Experiments of Materials II	4	4	8	Spr	3/Spr	E	MSE307	MSE
	MSE328	Physics of Materials	3		3	Spr	3/Spr	E	MSE001 MSE002 MSE203	MSE
	Total		44	14.5	59					
	Notes: * Please choose MSE001 and MSE002 at the same semester; Please choose MSE202 and MSE204 at the same semester.									
Major Core Courses	Materials Chemistry Track									
	MSE210	General Organic Chemistry*	3		3	Spr	2/Spr	E	CH101A	MSE
	MSE212	Basic Experiments for Organic Chemistry*	1	1	2	Spr	2/Spr	E	CH101A	MSE
	MSE313	#Polymer Materials	3		3	Spr	2/Spr	E	MSE001 MSE002	MSE
	MSE315	#Physical Metallurgy	3		3	Fall	3/Fall	E	MSE001 MSE002	MSE
	MSE317	#Ceramic Materials	3		3	Fall	3/Fall	E	MSE001 MSE002	MSE
	MSE332	Fundamentals of Electrochemistry	3		3	Spr	3/Spr	E	MSE202	MSE
	MSE342	Crystal Chemistry	3		3	Spr	3/Spr	E	MSE001	MSE
	MSE338	Biomaterials*	2		2	Spr	3/Spr	E	MSE001	MSE
	MSE340	Experiments for Biomaterials*	2	2	4	Spr	3/Spr	E	MSE002	MSE
	Total		23	3	26					
	Materials Physics Track									
	MSE311	#Thermodynamics of Materials	3		3	Fall	3/Fall	E	MA102B MA107B MSE001 MSE002	MSE
	MSE313	#Polymer Materials	3		3	Spr	2/Spr	E	MSE001 MSE002	MSE
	MSE315	#Physical Metallurgy	3		3	Fall	3/Fall	E	MSE001 MSE002	MSE
	MSE317	#Ceramic Materials	3		3	Fall	3/Fall	E	MSE001 MSE002	MSE
	MSE338	Biomaterials*	2		2	Spr	3/Spr	E	MSE001	MSE
	MSE340	Experiments for Biomaterials*	2	2	4	Spr	3/Spr	E	MSE002	MSE
	MSE310	Semiconducting Materials, Devices and Technology	3		3	Spr	3/Spr	E	MSE001 MSE002	MSE
	MSE344	Applied Quantum Mechanics	3		3	Fall	3/Fall	E	PHY105B	MSE
	Total		22	2	24					

<p>Notes: The major core courses are divided into tracks: Materials Physics Track and Materials Chemistry Track. Under the guidance of the research tutor, the students should choose at least 13 credits in one direction, and the courses in the other direction can be regarded as major elective courses' credits.</p> <p># Please at least choose two from MSE313, MSE317, MSE315;</p> <p>MSE311 is a compulsory course for the students who choose Materials Physics Track.</p> <p>* Please choose MSE210 and MSE212 at the same semester;</p> <p>Please choose MSE338 and MSE340 at the same semester.</p>										
Practice-Based Courses	MSE480	Projects of Science and Technology	2	2	16	Spr/ Fall	Spr/Fall	B	None	MSE
	MSE470-17	Industrial Practice	4	4	16	Smr	3/Smr	B	None	MSE
	MSE490	Thesis (Graduation Project)*	8	8	16	Spr	4/Spr	B	None	MSE
	Total		14	14	48					
	<p>Notes:</p> <p>*Students who have completed Comprehensive Design I&II (COE491 & COE492) are not required to take the MSE490 Thesis (Graduation Project).</p>									

Table 2: Major Elective Courses

Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	take the course Advised term to	Instruction language	Prerequisite	Dept.
BIO102B	Introduction to Life Science	3		3	Spr/Fall	2/3/Spr or Fall	E	None	BIO
MSE460	Introduction of Materials Science and Engineering	1	0.5	1.5	Smr	1/2/Smr	E	None	MSE
MSES101	Nanomaterials and its Fabrication Methods	1		1	Smr	1/2/Smr	B	None	MSE
MSES102	Introduction to Soft Matter	1		1	Smr	1/2/Smr	E	None	MSE
MSES104	Materials Characterization	1		1	Smr	1/2/Smr	E	PHY105B	MSE
MSE321	#Advanced Materials Research I	1	1	2	Spr/Fall	2Spr/3Fall	B	None	MSE
EE202-17	Digital Circuit	3		3	Spr	2/Spr	E	PHY105B	EE
EE202-17 L	Digital Circuit Laboratory	1	1	2	Spr	2/Spr	E	EE202-17	EE
MSES105	Nanoprobes in Material Science, Physics and Chemistry	2		2	Smr	2/Smr	E	None	MSE
MSES103	Introduction to Nanotechnology	1		1	Smr	2/Smr	E	None	MSE
MAE309	Principle of Transport Phenomena	3		3	Fall	3/Fall	E	MA102B	MAE
MSE325	Functional Polymers	3		3	Fall	3/Fall	E	None	MSE
MSE327	Photonic Materials and Metamaterials	3		3	Fall	3/Fall	E	PHY105B	MSE
MSE413	3D Printing and Laser-based Additive Manufacturing	3		3	Fall	3/Fall	E	None	MSE
MSE334	Introduction to Energy Materials	2		2	Spr	3/Spr	E	MSE001	MSE
MSE322	Composite Materials	3		3	Spr	3/Spr	E	MSE213	MSE
MSE318	#Advanced Materials Research II	1	1	2	Spr	3/Spr	B	MSE321	MSE
MSE320	Introduction to Photovoltaics and Photo-thermal	3		3	Spr	3/Spr	B	MSE205(or EE201)	MSE
MSE330	Powder Metallurgy and 3D Printing of Metallic Materials	3		3	Spr	3/Spr	E	MSE315	MSE
MSE348	Materials Science and Artificial Intelligence	3		3	Spr	3/Spr	E	PHY105B	MSE
MSE343	Computational Materials Science	3	1	4	Spr	3/Spr	E	MSE203	MSE
MSE401	#Advanced Materials Research III	1	1	2	Fall	4/Fall	B	MSE318	MSE
MSE407	Advanced Thin Film Technology	3		3	Fall	4/Fall	E	MSE001	MSE
ME103	Awareness Practical of Manufacturing Engineering	3	2	5	Fall	4/Fall	B	None	ME
EE419	Biosensors	3	1	4	Fall	4/Fall	E	None	EE

PHY429	Advanced Electron Microscopy	3	1	4	Fall	4/Fall	B	PHY321-15	PHY
Total		58	9.5	67.5					
Notes: At least 7 credits are required; #MSE321、MSE318、MSE401 are compulsory courses.									

Table 3: Overview of Practice-Based Courses

Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	take the course Advised term to	Instruction language	Prerequisite	Dept.
ME102	CAD Engineering Drawing	3	1.5	5	Spr	1/Spr	E	None	ME
EE201-17L	Analog Circuit Laboratory	1	1	2	Fall	2/Fall	E	MSE205	EE
MSE002	Experiments for Fundamentals of Materials Science	1	1	2	Spr/Fall	2/Fall	E	PHY105B CH101A	MS E
MSE204	Physical Chemistry Experiments	1	1	2	Spr	2/Spr	E	None	MS E
MSE321	Advanced Materials Research I	1	1	2	Spr/Fall	2Spr/3Fall	B	None	MS E
EE202-17L	Digital Circuit Laboratory	1	1	2	Spr	2/Spr	C	EE202-17	EE
MSE212	Basic Experiments for Organic Chemistry	1	1	2	Spr	2/Spr	E	CH101A	MS E
MSE460	Introduction of Materials Science and Engineering	1	0.5	1.5	Smr	1/2/Smr	E	None	MS E
MSE307	Comprehensive Experiments of Materials I	4	4	8	Fall	3/Fall	E	MSE203 MSE213	MS E
MSE345	Experiments for Advanced Materials Science and Engineering I	1	1	2	Fall	3/Fall	E	MSE002	MS E
MSE346	Experiments for Advanced Materials Science and Engineering II	1	1	2	Spr	3/Spr	E	MSE345	MS E
MSE340	Experiments for Biomaterials	2	2	4	Spr	3/Spr	E	MSE002	MS E
MSE318	Advanced Materials Research II	1	1	2	Spr	3/Spr	B	MSE321	MS E
MSE304	Comprehensive Experiments of Materials II	4	4	8	Spr	3/Spr	E	MSE307	MS E
MSE343	Computational Materials Science	3	1	4	Spr	3/Spr	E	MSE203	MS E
MSE401	Advanced Materials Research III	1	1	2	Fall	4/Fall	B	MSE318	MS E
EE419	Biosensors	3	1	4	Fall	4/Fall	E	None	EE
PHY429	Advanced Electron Microscopy	3	1	4	Fall	4/Fall	B	PHY321-15	PH Y
MSE470-17	Industrial Practice	4	4	16	Smr	3/Smr	B	None	MS E
MSE480	Projects of Science and Technology	2	2	16	Spr/Fall	Spr/Fall	B	None	MS E
MSE490	Thesis (Graduation Project)	8	8	16	Spr	4/Spr	B	None	MS E
Total		47	39	1065					

Table 4: Overview of Course Hours and Credits

Materials Chemistry Track

Course Category	Total Course Hours	Total Credits	Credit Requirements	Percentage of the Total*
General Education (GE) Required Courses (not including English courses)	1088	49	49	35.8%
General Education (GE) Elective Courses			10	7.3%
Major Foundational Courses	944	44	44	32.1%
Major Core Courses	416	23	13	9.5%
Major Elective Courses	1080	55	7	5.1%
Research Projects, Internship and Undergraduate Thesis/Projects	768	14	14	10.2%
Total (not including English courses)	4296	185	137	

* Percentage of the total= Credit requirements of each line / Total credit requirements.

Materials Physics Track

Course Category	Total Course Hours	Total Credits	Credit Requirements	Percentage of the Total*
General Education (GE) Required Courses (not including English courses)	1088	49	49	35.8%
General Education (GE) Elective Courses			10	7.3%
Major Foundational Courses	944	44	44	32.1%
Major Core Courses	384	22	13	9.5%
Major Elective Courses	1080	55	7	5.1%
Research Projects, Internship and Undergraduate Thesis/Projects	768	14	14	10.2%
Total (not including English courses)	4296	185	137	

* Percentage of the total= Credit requirements of each line / Total credit requirements.

Curriculum Structure of Materials Chemistry Track

General Education Required Courses (49 credits) Major Foundational Required Courses (44 credits)

Calculus I A	Frontier Seminars in Materials Science and Engineering
Calculus II A	CAD Engineering Drawing
Linear Algebra B	Fundamentals of Circuits and Electronics
General Physics I B	Analog Circuit Laboratory
General Physics II B	Fundamentals of Materials Science and Engineering
General Chemistry A	Experiments for Fundamentals of Materials Science and Engineering
Introduction to Programming B	Crystallography
Experiments of Fundamental Physics	Probability and Statistics
Physical Education I	Physical Chemistry
Physical Education II	Physical Chemistry Experiments
Physical Education III	Mechanics of Materials B
Physical Education IV	Materials Characterization Techniques
Elementary Chinese I	Materials Chemistry
Elementary Chinese II	Seminars Frontiers of Modern Materials Science and Technology
Intermediate Chinese I	Comprehensive Experiments of Materials I
Intermediate Chinese II	Experiments for Advanced Materials Science and Engineering I
Advanced Chinese I	Experiments for Advanced Materials Science and Engineering II
Advanced Chinese II	Comprehensive Experiments of Materials II
Chinese Culture	Physics of Materials
Chinese History	

Practice-Based Required Courses (14 credits)

Industrial Practice
Projects of Science and Technology
Thesis (Graduation Project)*

* Students who have completed Comprehensive Design I&II are not required to take the Thesis (Graduation Project).

Major Core Courses (at least 13 credits)

General Organic Chemistry
Basic Experiments for Organic Chemistry
Polymer Materials
Physical Metallurgy
Ceramic Materials
Fundamentals of Electrochemistry
Crystal Chemistry
Biomaterials
Experiments for Biomaterials

at least choose two

Major Elective Courses (at least 7 credits)

Introduction to Life Science
Advanced Materials Research I/II/III (Compulsory Courses)
Introduction of Materials Science and Engineering
Nanomaterials and its Fabrication Methods
Introduction to Soft Matter
Materials Characterization
Nanoprobes in Material Science, Physics and Chemistry
Introduction to Nanotechnology
Principle of Transport Phenomena
Functional Polymers
Photonic Materials and Metamaterials
3D Printing and Laser-based Additive Manufacturing
Introduction to Energy Materials
Composite Materials
Introduction to Photovoltaics and Photo-thermal
Powder Metallurgy and 3D Printing of Metallic Materials
Materials Genomics
Computational Materials Science
Advanced Thin Film Technology
Awareness Practical of Manufacturing Engineering
Biosensors
Advanced Electron Microscopy
Digital Circuit
Digital Circuit Laboratory

The minimum credit requirement for graduation: 137 credits (including 10 credits for GE Elective Courses, not including English courses)

Curriculum Structure of Materials Physics Track

General Education Required Courses (49 credits)

Calculus I A
Calculus II A
Linear Algebra B
General Physics I B
General Physics II B
General Chemistry A
Introduction to Programming B
Experiments of Fundamental Physics
Physical Education I
Physical Education II
Physical Education III
Physical Education IV
Elementary Chinese I
Elementary Chinese II
Intermediate Chinese I
Intermediate Chinese II
Advanced Chinese I
Advanced Chinese II
Chinese Culture
Chinese History

Major Foundational Required Courses (44 credits)

Frontier Seminars in Materials Science and Engineering
CAD Engineering Drawing
Fundamentals of Circuits and Electronics
Analog Circuit Laboratory
Fundamentals of Materials Science and Engineering
Experiments for Fundamentals of Materials Science and Engineering
Crystallography
Probability and Statistics
Physical Chemistry
Physical Chemistry Experiments
Mechanics of Materials B
Materials Characterization Techniques
Materials Chemistry
Seminars Frontiers of Modern Materials Science and Technology
Comprehensive Experiments of Materials I
Experiments for Advanced Materials Science and Engineering I
Experiments for Advanced Materials Science and Engineering II
Comprehensive Experiments of Materials II
Physics of Materials

Practice-Based Required Courses (14 credits)

Industrial Practice
Projects of Science and Technology
Thesis (Graduation Project)*

* Students who have completed Comprehensive Design I&II are not required to take the Thesis (Graduation Project).

Major Core Courses (at least 13 credits)

Thermodynamics of Materials (Compulsory Course)
Semiconducting Materials, Devices and Technology
Polymer Materials
Physical Metallurgy
Ceramic Materials
Applied Quantum Mechanics
Biomaterials
Experiments for Biomaterials

at least choose two

Major Elective Courses (at least 7 credits)

Introduction to Life Science
Advanced Materials Research I/II/III (Compulsory Courses)
Introduction of Materials Science and Engineering
Nanomaterials and Its Fabrication Methods
Introduction to Soft Matter
Materials Characterization
Nanoprobes in material science, physics and chemistry
Introduction to Nanotechnology
Principle of Transport Phenomena
Functional Polymers
Photonic Materials and Metamaterials
3D Printing and Laser-based Additive Manufacturing
Introduction to Energy Materials
Composite Materials
Introduction to Photovoltaics and Photo-thermal
Powder metallurgy and 3D printing of metallic materials
Materials Genomics
Computational Materials Science
Advanced Thin Film Technology
Awareness Practical of Manufacturing Engineering
Biosensors
Advanced Electron Microscopy
Digital Circuit
Digital Circuit Laboratory

The minimum credit requirement for graduation: 137 credits (including 10 credits for GE Elective Courses, not including English courses)

