

# Required Courses [Admitted in 2014]

## General Education Subject Requirements [At least 43 credits]

### Academic Foundations [37]

- Critical Thinking and Writing(3) : Writing in Science & Technology
- Foreign Languages(4~6) : 2 foreign language classes
- Mathematical Sciences(12) : Calculus 1,2 (or Honor Calculus and Practice 1,2),  
Engineering Mathematics 1,2
- Computer and Information Science : Fundamentals of Computer System
- Natural Sciences(16) : \* In at least one of Physics and Chemistry, both 1·2 must be taken.

•(Students who haven't taken Physics 1,2, Chemistry 1,2 in high school may take Foundation of Physics 1,2(Foundation of Chemistry) instead)

### Worlds of Knowledge [6]

- Language and Literature – Culture and Art – History and Philosophy –  
Politics and Economy – Humans and Society –

## General Engineering Subjects [6 Course Credits]

- Courses for Entrepreneurship(3) / - Courses for Creativity(3)

Courses for Entrepreneurship	(GE) 046.018 Technology and Enterprise / (GE) 054.027 Entrepreneurship and Economy (GE) 046.017 Technology and Economy / (GE) 054.025 Engineering Ethics and Leadership (GE) 054.028 Patent and Technology Entrepreneurship (Major) 400.212 Technology and Entrepreneurship (Major) 400.025 Modern Technology and Ethical Thinking (Major) 400.513 History of Engineering and Technology (Major) 400.213 Innovation and Creativity Practice (Major) 400.214 Engineering Frontiers and Leadership (Relevant only to those who matriculated in 2013, 2014)
Courses for Creativity	(GE) 054.019 A Glance at Korean Contemporary Urbanism and Architecture (GE) 054.021 Creativity and Design (GE) 054.022 Technology and Art: Exhibit, Art, Engineering (GE) 054.020 The Science of Sound, and Experience of Music Instrument Design and Evaluation (Major) 400.018 Creative Engineering Design / (Major) 400.318 Digital Art Engineering (Major) 406.549 Creative Technology Intelligence (Major) 406.324A Creative Thinking for Engineers

\* According to change in curriculum completion requirements College of Engineering-586  
 in Courses for Entrepreneurship and Creativity (2016.1.8.)

- For those who were admitted in 2013 and thereafter, required 3 credits in 'Courses for Entrepreneurship' can be substituted with courses in 'Humans and Society' from the <World of Knowledge>.
- Likewise, required 3 credits in 'Courses for Creativity' can be substituted with courses in 'Culture and Art' from the <World of Knowledge>.

## Subjects Required for Major [39 Course Credits]

Required major 36 + Major elective 26 = Total major 62

1<sup>st</sup> year : Principles of Material Engineering

2<sup>nd</sup> year : Physical Chemistry of Materials 1 · 2, Introduction to Crystallography, Chemistry of Organic Materials

3<sup>rd</sup> year : Thermodynamics of Materials, Experiments in Materials 1 · 2, Mechanical Behavior of Materials, Phase Transformation in Materials, Electric, Magnetic and Optical Properties of Materials

4<sup>th</sup> year : Capstone Design for Material Science and Engineering, Self-design Experiments in Materials ([Major Elective](#))

※ 1. [Minimum 12 credits required in design](#)(minimum 12 course credits required in classes that include design)

2. [Foreign language conducted course registration requirement](#): Starting from those admitted in 2008, all students must take minimum 3 courses that are conducted in foreign language, including 1 major subject.

(['College English' is excluded from English-conducted course list starting from those admitted in 2012](#))

# Required Courses (Admitted in 2015)

## General Education Subject Requirements (At least 43 credits)

### Academic Foundations(37)

- Critical Thinking and Writing(3) : Writing in Science & Technology
- Foreign Languages(4~6) : 2 foreign language classes
- Mathematical Sciences(12) : Calculus 1,2 (or Honor Calculus and Practice 1,2)  
Engineering Mathematics 1,2
- Computer and Information Science(2) : Fundamentals of Computer System
- Natural Sciences(16) : \* In at least one of Physics and Chemistry, both 1 · 2 must be taken.

•(Students who haven't taken Physics 1,2 in high school may take Foundation of Physics 1,2 instead)

### Worlds of Knowledge(6)

- Language and Literature – Culture and Art – History and Philosophy –  
– Politics and Economy – Humans and Society –

## General Engineering Subjects(6)

- Courses for Entrepreneurship(3) / - Courses for Creativity(3)

Courses for Entrepreneurship	(GE) 046.018 Technology and Enterprise / (GE) 054.027 Entrepreneurship and Economy (GE) 046.017 Technology and Economy / (GE) 054.025 Engineering Ethics and Leadership (GE) 054.028 Patent and Technology Entrepreneurship (Major) 400.212 Technology and Entrepreneurship (Major) 400.025 Modern Technology and Ethical Thinking (Major) 400.513 History of Engineering and Technology (Major) 400.213 Innovation and Creativity Practice (Major) M2177.000100 Management for Engineers (Major) 400.214 Engineering Frontiers and Leadership (Relevant only to those who matriculated in 2013, 2014)
Courses for Creativity	(GE) 054.019 A Glance at Korean Contemporary Urbanism and Architecture (GE) 054.021 Creativity and Design (GE) 054.022 Technology and Art: Exhibit, Art, Engineering (GE) 054.020 The Science of Sound, and Experience of Music Instrument Design and Evaluation (Major) 400.018 Creative Engineering Design / (Major) 400.318 Digital Art Engineering (Major) 406.549 Creative Technology Intelligence (Major) 406.324A Creative Thinking for Engineers

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4<sup>th</sup> year: Capstone Design for Material Science and Engineering, Self-design Experiments in Materials (Major Elective)

⌘ 1. [Minimum 12 credits required in design](#)(minimum 12 course credits required in classes that include design)

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([College English](#) is excluded from English-conducted course list starting from those admitted in 2012)

# Required Courses(Admitted in 2016)

## General Education Subject Requirements (At least 43 credits)

### Academic Foundations(37)

- Critical Thinking and Writing(3): Writing in Science & Technology
- Foreign Languages(4~6) : 2 foreign language classes
- Mathematical Sciences(12): Calculus 1,2 (or Honor Calculus and Practice 1,2)  
Engineering Mathematics 1,2
- Computer and Information Science(2): Fundamentals of Computer System
- Natural Sciences(16) : \* In at least one of Physics and Chemistry, both 1 · 2 must be taken.

•(Students who haven't taken Physics 1,2 in high school may take Foundation of Physics 1,2 instead)

### Worlds of Knowledge(6)

- Language and Literature – Culture and Art – History and Philosophy –  
– Politics and Economy – Humans and Society –

## General Engineering Subjects(6)

- Courses for Entrepreneurship(3) / - Courses for Creativity(3)

Courses for Entrepreneurship	(GE) 054.027 Entrepreneurship and Economy (GE) 046.017 Technology and Economy / (GE) 054.025 Engineering Ethics and Leadership (GE) 054.028 Patent and Technology Entrepreneurship (Major) 400.212 Technology and Entrepreneurship (Major) 400.025 Modern Technology and Ethical Thinking (Major) 400.513 History of Engineering and Technology (Major) 400.213 Innovation and Creativity Practice (Major) M2177.000100 Management for Engineers (Major) M2177.000700 Engineering Frontiers and Leadership (Relevant only to those who atriculated in 2013, 2014)
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\* According to change in curriculum completion requirements College of Engineering-586 (2016.1.8.) in Courses for Engrepreneurship and Creativity

- For those who were admitted in 2013 and thereafter, required 3 credits in 'Courses for Entrepreneurship' can be substituted with courses in 'Humans and Society' from the <World of Knowledge>.
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## Subjects Required for Major (39 Course Credits)

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4<sup>th</sup> year: Capstone Design for Material Science and Engineering, Self-design Experiments in Materials (Major Elective)

※ 1. Minimum 12 credits required in design (minimum 12 course credits required in classes that include design)

2. Foreign language conducted course registration requirement: Starting from those admitted in 2008, all students must take minimum 3 courses that are conducted in foreign language, including 1 major subject.

(‘College English’ is excluded from English-conducted course list starting from those admitted in 2012)

3. Compulsory education subject : It is mandatory for students to take the Life Respect (Suicide Prevention) education from the freshmen of the College of Engineering in 2016 and submit a copy of the Life Resume (Suicide Prevention) Training Certificate to the Department (Department) at the time of graduation application.

# Required Courses(Admitted in 2017)

## General Education Subject Requirements (At least 43 credits)

### Academic Foundations(37)

- Critical Thinking and Writing(3): Writing in Science & Technology
- Foreign Languages(4~6) : 2 foreign language classes
- Mathematical Sciences(12): Calculus 1,2 (or Honor Calculus and Practice 1,2)  
Engineering Mathematics 1,2
- Computer and Information Science(2): Fundamentals of Computer System
- Natural Sciences(16) : \* In at least one of Physics and Chemistry, both 1 · 2 must be taken.

•(Students who haven't taken Physics 1,2, Chemistry 1,2 in high school may take Foundation of Physics 1,2(Foundation of Chemistry) instead)

### Worlds of Knowledge(6)

- Language and Literature – Culture and Art – History and Philosophy –  
– Politics and Economy – Humans and Society –

## General Engineering Subjects(6)

- Courses for Entrepreneurship(3) / - Courses for Creativity(3)

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Courses for Creativity	(GE) 054.019 A Glance at Korean Contemporary Urbanism and Architecture (GE) 054.021 Creativity and Design / (GE) 054.022 Technology and Art: Exhibit, Art, Engineering (GE) 054.020 The Science of Sound, and Experience of Music Instrument Design and Evaluation (Major) 400.018 Creative Engineering Design / (Major) 400.318 Digital Art Engineering (Major) 406.549 Creative Technology Intelligence (Major) 406.324A Creative Thinking for Engineers (Major) M2177.002300 Interdisciplinary Innovative Capstone Design (Major) M2177.002400 Global Innovative Capstone Design

\* According to change in curriculum completion requirements College of Engineering-586 (2016.1.8.) in Courses for Entrepreneurship and Creativity

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## Subjects Required for Major (39 Course Credits)

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4<sup>th</sup> year: Capstone Design for Material Science and Engineering, Self-design Experiments in Materials (Major Elective)

※ 1. Minimum 12 credits required in design (minimum 12 course credits required in classes that include design)

2. Foreign language conducted course registration requirement: Starting from those admitted in 2008, all students must take minimum 3 courses that are conducted in foreign language, including 1 major subject.

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3. Compulsory education subject : It is mandatory for students to take the Life Respect (Suicide Prevention) education from the freshmen of the College of Engineering in 2016 and submit a copy of the Life Resume (Suicide Prevention) Training Certificate to the Department (Department) at the time of graduation application.



# 2018

General Education		Credit Requirements (43 or more)			
Categories	Areas	Required Courses	Credits	Comments	
Academic Foundations	Critical Thinking and Writing	[1-1] Writing in Science & Technology	3		
	Foreign Languages	[1-1,2] 2 courses	4-6	• Students with a TEPS score of 900 and below upon matriculation must take at least one English course.	
	Mathematical Sciences	[1-1] Calculus 1 or Honor Calculus and Practice 1 [1-2] Calculus 2 or Honor Calculus and Practice 2 [2-1] Engineering Mathematics 1 [2-2] Engineering Mathematics 2	12		
	Natural Sciences	[1-1,2] Required electives (16) Must earn 8 credits each semester from among the following: Physics 1:2(or Honor Physics 1:2), Chemistry 1:2, Biology 1:2, Physics, Chemistry, Biology, (Statistics), Physics Lab. 1:2, Chemistry Lab. 1:2, Biology Lab. 1:2, Physics Lab., Chemistry Lab., Biology Lab., (Statistics Lab.)	16	• Students taking Statistics or a course in Natural Sciences must take the corresponding labs concurrently. • Students who did not complete Physics 1,2 in high school may take Foundation of Physics 1,2 instead of Physics 1,2. Note that Physics Lab. 1,2 must be taken concurrently with the corresponding courses. • Must earn 8 credits in 2 semesters by taking either Physics 1,2 or Chemistry 1,2 in sequential order.	
	Computer and Information Science	[1-2] Fundamentals of Computer System	2		
Worlds of Knowledge	Language and Literature		6	• Must earn 6 credits in at least 2 out of 5 areas (Languages and Literature, Culture and Art, History and Philosophy, Politics and Economy, Human and Society) • * Refer to the information below.	
	Culture and Art				* (3)
	History and Philosophy				
	Politics and Economy				
	Humans and Society				* (3)
	Nature and Technology				
	Life and Environment				
All General Education Courses				• Students may select any courses from the list of General Education courses.	

- ※ Although (Statistics), (Statistics Lab.) are included in Mathematical Sciences, they are counted towards Natural Sciences credit requirements.
- ※ When students are exempt from taking 'Fundamentals of Computer System, Digital Computer Concept and Practice', they are recognized as fulfilling the minimum credit requirements in Academic Foundations(Computer and Information Science) even when the students did not earn the required credits. Regardless, students must meet the minimum general education credit requirements.
- ※ Aside from the above General Education requirements, the students entered in 2013 and thereafter must earn 3 credits from both

'Courses for Entrepreneurship' and 'Courses for Creativity' which are designated by College of Engineering, totaling 6 credits . 'Courses for Entrepreneurship' can be substituted with courses in 'Humans and Society' from <Worlds of Knowledge>, and the required 3 credits in 'Courses for Creativity' can be substituted with courses in 'Culture and Art' from <Worlds of Knowledge>. (Students must consult with the department about the requirement)

Courses for Entrepreneurship	(GE) 054.027 Entrepreneurship and Economy (GE) 046.017 Technology and Economy (GE) 054.025 Engineering Ethics and Leadership (GE) 054.028 Patent and Technology Entrepreneurship (Major) 400.212 Technology and Entrepreneurship (Major) 400.025 Modern Technology and Ethical Thinking (Major) 400.513 History of Engineering and Technology (Major) 400.213 Innovation and Creativity Practice (Major) M2177.000100 Management for Engineers (Major) M2177.000700 Engineering Frontiers and Leadership 3(Open ONLY to undergraduate students who entered in 2013, 2014)
Courses for Creativity	(GE) 054.019 A Glance at Korean Contemporary Urbanism and Architecture (GE) 054.021 Creativity and Design (GE) 054.022 Technology and Art: Exhibit·Art·Engineering (GE) 054.020 The Science of Sound, and Experience of Music Instrument Design and Evaluation (Major) 400.018 Creative Engineering Design (Major) 400.318 Digital Art Engineering (Major) 406.549 Creative Technology Intelligence (Major) 406.324A Creative Thinking for Engineers (Major) M2177.002300 Interdisciplinary Innovative Capstone Design (Major) M2177.002400 Global Innovative Capstone Design

\* Numbers in brackets indicate semester scheduling recommendations.

## ■Subjects Required for Major (39 Course Credits)

Required major 36 + Major elective 26 = Total major 62

-1st year: Principles of Material Engineering

-2nd year: Physical Chemistry of Materials 1,2, Introduction to Crystallography, Chemistry of Organic Materials

-3rd year: Thermodynamics of Materials, Experiments in Materials 1,2, Mechanical Behavior of Materials, Phase Transformation in Materials, Electric, Magnetic and Optical Properties of Materials

-4th year: Capstone Design for Material Science and Engineering, Self-design Experiments in Materials (Major Elective)

●Minimum 12 credits required in design(minimum 12 course credits required in classes that include design)

●Foreign language conducted course registration requirement: Starting from those admitted in 2008, all students must take minimum 3 courses that are conducted in foreign language, including 1 major subject. ('College English' is excluded from English-conducted course list starting from those admitted in 2012)

●compulsory education subject

It is mandatory for students to take the Life Respect (Suicide Prevention) education from the freshmen of the College of Engineering in 2016 and submit a copy of the Life Resume (Suicide Prevention) Training Certificate to the Department (Department) at the time of graduation application.

●Credited as Major Elective for Dept. of Materials Science and Engineering

①Courses in other departments of College of Engineering and courses in College of Natural Sciences from different universities, which are approved by the Dean of DMSE

②Courses in College of Business Administration, which are credited as designated major electives by College of Engineering (251.101, 251.204(=251.204A), 251.205, 251.209, 251.215, 251.301, 251.303, 251.319(=251.332), 251.321, 251.322)

●Prerequisites of Electric, Magnetic and Optical Properties of Materials are 445.202 'Modern Physics of Materials', 3343.201 'Quantum Chemistry' of Department of Chemistry, 400.307 'Basics of Quantum Mechanics' of College of Engineering, 3342.201 'Basic Modern Physics' of Department of Physics, 884.303 'Quantum Physics 1', 3348.305 'Basics of Quantum Physics' and other courses approved by Academic Committee of the Department of Materials Science and Engineering(Prerequisite courses will be enforced without exception from Fall 2008)

●Total 130 credits or higher / Overall GPA 2.0 or higher / major GPA 2.0 or higher

# 2019

General Education		Credit Requirements (44 or more)		
Categories	Areas	Required Courses	Credits	Comments
Academic Foundations	Critical Thinking and Writing	[1-1] College Writing 1 [1-2] College Writing 2: Writing in Science & Technology	4	
	Foreign Languages	[1-1,2] 2 courses	4-6	• Students with a TEPS score of 900 (New TEPS score of 525) and below upon matriculation must take at least one English course.
	Mathematical Sciences	[1-1] Calculus 1 and Calculus Practice 1 or Honor Calculus 1 and Honor Calculus Practice 1 [1-2] Calculus 2 and Calculus Practice 2 or Honor Calculus 2 and Honor Calculus Practice 2 [2-1] Engineering Mathematics 1 [2-2] Engineering Mathematics 2	12	• Students taking Calculus 1,2 or Honor Calculus 1,2 must take the corresponding labs concurrently.
	Natural Sciences	[1-1,2] Required electives (16) • Must earn 8 credits each semester from among the following: Physics 1*(can be replaced with Foundation of Physics 1 or Honor Physics 1) and Physics Lab. 1, Physics 2*(can be replaced with Foundation of Physics 2 or Honor Physics 2) and Physics Lab. 2, Chemistry 1 and Chemistry Lab. 1, Chemistry 2 and Chemistry Lab. 2, Biology 1 and Biology Lab. 1, Biology 2 and Biology Lab. 2, Physics and Physics Lab., Chemistry and Chemistry Lab., Biology and Biology Lab., (Statistics and Statistics Lab.)	16	• Students taking Statistics or a course in Natural Sciences must take the corresponding labs concurrently. • *Students who took High School Physics 2 in high school must take Physics 1, 2 while who did not must take Foundation of Physics 1, 2. • If a student required to take Foundation of Physics 1, 2 wishes to take Physics 1, 2, the student must pass the minimum score requirement at Physics qualification test. • Must earn 8 credits in 2 semesters by taking either Physics 1,2 or Chemistry 1,2 in sequential order.
	Computer and Information Science	[1-2] Fundamentals of Computer System	2	
Worlds of Knowledge	Language and Literature		6	<ul style="list-style-type: none"> <li>• Must earn 6 credits in at least 2 out of 5 areas (Languages and Literature, Culture and Art, History and Philosophy, Politics and Economy, Human and Society)</li> <li>• <b>** Refer to the information below.</b></li> </ul>
	Culture and Art			
	History and Philosophy			
	Politics and Economy			
	Humans and Society			
	Nature and Technology			
	Life and Environment			
All General Education Courses				• Students may select any courses from the list of General Education courses.

- ※ Although (Statistics), (Statistics Lab.) are included in Mathematical Sciences, they are counted towards Natural Sciences credit requirements.
- ※ When students are exempt from taking 'Fundamentals of Computer System, Digital Computer Concept and Practice', they are recognized as fulfilling the minimum credit requirements in Academic Foundations(Computer and Information Science) even when the students did not earn the required credits. Regardless, students must meet the minimum general education credit requirements.
- ※ Aside from the above General Education requirements, the students entered in 2013 and thereafter must earn 3 credits from both

'Courses for Entrepreneurship' and 'Courses for Creativity' which are designated by College of Engineering, totaling 6 credits . 'Courses for Entrepreneurship' can be substituted with courses in 'Humans and Society' from <Worlds of Knowledge>, and the required 3 credits in 'Courses for Creativity' can be substituted with courses in 'Culture and Art' from <Worlds of Knowledge>. (Students must consult with the department about the requirement)

Courses for Entrepreneurship	(GE) 054.027 Entrepreneurship and Economy (GE) 046.017 Technology and Economy (GE) 054.025 Engineering Ethics and Leadership (GE) 054.028 Patent and Technology Entrepreneurship (Major) 400.212 Technology and Entrepreneurship (Major) 400.025 Modern Technology and Ethical Thinking(Open ONLY to undersgraduate students who entered before 2018) (Major) 400.513 History of Engineering and Technology(Open ONLY to undersgraduate students who entered before 2018) (Major) M2177.000100 Management for Engineers (Major) M2177.000700 Engineering Frontiers and Leadership 3(Open ONLY to undergraduate students who entered in 2013, 2014) (Major) 400.310 Enginnering Technology and Society
Courses for Creativity	(GE) 054.019 A Glance at Korean Contemporary Urbanism and Architecture (GE) 054.021 Creativity and Design (GE) 054.022 Technology and Art: Exhibit·Art·Engineering (GE) 054.020 The Science of Sound, and Experience of Music Instrument Design and Evaluation (Major) 400.018 Creative Engineering Design (Major) 400.318 Digital Art Engineering (Major) 406.324A Creative Thinking for Engineers (Major) M2177.002300 Interdisciplinary Innovative Capstone Design (Major) M2177.002400 Global Innovative Capstone Design (Major) M2177.005000 Digital Design and Manufacturing in Product Development

\* Numbers in brackets indicate semester scheduling recommendations.

## ■Subjects Required for Major (39 Course Credits)

Required major 36 + Major elective 26 = Total major 62

-1st year: Principles of Material Engineering

-2nd year: Physical Chemistry of Materials 1,2, Introduction to Crystallography, Chemistry of Organic Materials

-3rd year: Thermodynamics of Materials, Experiments in Materials 1,2, Mechanical Behavior of Materials, Phase Transformation in Materials, Electric, Magnetic and Optical Properties of Materials

-4th year: Capstone Design for Material Science and Engineering, Self-design Experiments in Materials (Major Elective)

●Minimum 12 credits required in design(minimum 12 course credits required in classes that include design)

●Foreign language conducted course registration requirement: Starting from those admitted in 2008, all students must take minimum 3 courses that are conducted in foreign language, including 1 major subject. ('College English' is excluded from English-conducted course list starting from those admitted in 2012)

●compulsory education subject

It is mandatory for students to take the Life Respect (Suicide Prevention) education from the freshmen of the College of Engineering in 2016 and submit a copy of the Life Resume (Suicide Prevention) Training Certificate to the Department (Department) at the time of graduation application.

●Credited as Major Elective for Dept. of Materials Science and Engineering

①Courses in other departments of College of Engineering and courses in College of Natural Sciences from different universities, which are approved by the Dean of DMSE

②Courses in College of Business Administration, which are credited as designated major electives by College of Engineering (251.101, 251.204(=251.204A), 251.205, 251.209, 251.215, 251.301, 251.303, 251.319(=251.332), 251.321, 251.322)

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●Total 130 credits or higher / Overall GPA 2.0 or higher / major GPA 2.0 or higher

# 2020

General Education		Credit Requirements (50 or more)		
Categories	Areas	Required Courses	Credits	Comments
Academic Foundations	Critical Thinking and Writing	[1-1] College Writing 1 [1-2] College Writing 2: Writing in Science & Technology	4	
	Foreign Languages	[1-1,2] 2 courses	4-6	• Students with a TEPS score of 900 (New TEPS score of 525) and below upon matriculation must take at least one English course.
	Mathematical Sciences	[1-1] Calculus 1 and Calculus Practice 1 or Honor Calculus 1 and Honor Calculus Practice 1 [1-2] Calculus 2 and Calculus Practice 2 or Honor Calculus 2 and Honor Calculus Practice 2 [2-1] Engineering Mathematics 1 [2-2] Engineering Mathematics 2	12	• Students taking Calculus 1,2 or Honor Calculus 1,2 must take the corresponding labs concurrently.
	Natural Sciences	[1-1,2] Required electives (16) • Must earn 8 credits each semester from among the following: Physics 1*(can be replaced with Foundation of Physics 1 or Honor Physics 1) and Physics Lab. 1, Physics 2*(can be replaced with Foundation of Physics 2 or Honor Physics 2) and Physics Lab. 2, Chemistry 1 and Chemistry Lab. 1, Chemistry 2 and Chemistry Lab. 2, Biology 1 and Biology Lab. 1, Biology 2 and Biology Lab. 2, Physics and Physics Lab., Chemistry and Chemistry Lab., Biology and Biology Lab., (Statistics and Statistics Lab.)	16	• Students taking Statistics or a course in Natural Sciences must take the corresponding labs concurrently. • *Students who took High School Physics 2 in high school must take Physics 1, 2 while who did not must take Foundation of Physics 1, 2. • If a student required to take Foundation of Physics 1, 2 wishes to take Physics 1, 2, the student must pass the minimum score requirement at Physics qualification test. • Must earn 8 credits in 2 semesters by taking either Physics 1,2 or Chemistry 1,2 in sequential order. • In case a student took both the course numbered '1' and the unnumbered one within the same subject group only one of those two courses can be taken into account as a requirement in Natural Sciences while the other is included in the total credit hours for liberal education requirements.
	Computer and Information Science	[1-2] Fundamentals of Computer System	2	
Worlds of Knowledge	Language and Literature		12	• Must earn 12 credits in at least 3 out of 5 areas (Language and Literature, Culture and Art, History and Philosophy, Politics and Economy, Humans and Society).
	Culture and Art			
	History and Philosophy			
	Politics and Economy			
	Humans and Society			
	Nature and Technology			
	Life and Environment			
All General Education Courses				• Students may select any courses from the list of General Education courses.

- ※ Although (Statistics), (Statistics Lab.) are included in Mathematical Sciences, they are counted towards Natural Sciences credit requirements.
- ※ When students are exempt from taking 'Fundamentals of Computer System, Digital Computer Concept and Practice', they are recognized as fulfilling the minimum credit requirements in Academic Foundations(Computer and Information Science) even when the students did not earn the required credits. Regardless, students must meet the minimum general education credit requirements.
- ※ Numbers in brackets indicate semester scheduling recommendations.

## ■Subjects Required for Major (39 Course Credits)

Required major 36 + Major elective 26 = Total major 62

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●compulsory education subject

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●Credited as Major Elective for Dept. of Materials Science and Engineering

①General courses at college of engineering : all courses numbered as 400.XXX or M2177.XXXXXX(only up to 3 credits are admitted)

②Courses in other departments of College of Engineering and courses in College of Natural Sciences from different universities, which are approved by the Dean of DMSE

●Prerequisites of Electric, Magnetic and Optical Properties of Materials are 445.202 'Modern Physics of Materials', 3343.201 'Quantum Chemistry' of Department of Chemistry, 400.307 'Basics of Quantum Mechanics' of College of Engineering, 3342.201 'Basic Modern Physics' of Department of Physics, 884.303 'Quantum Physics 1', 3348.305 'Basics of Quantum Physics' and other courses approved by Academic Committee of the Department of Materials Science and Engineering(Prerequisite courses will be enforced without exception from Fall 2008)

●Total 130 credits or higher / Overall GPA 2.0 or higher / major GPA 2.0 or higher