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2026
COURSE CATALOG Undergraduate

ULSAN NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY

Undergraduate Program

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Definitions [용어정의]

Terms/용어	Definition/정의
Curriculum Year [교육과정 적용연도]	In principle, students should refer to their entrance year curriculum. However, the new curriculum can also be counted accordingly. Students who have changed their following curriculum from track-based to department-based should follow 2021 curriculum in principle. 원칙적으로, 본인의 입학년도 교육과정을 따라야 하나, 이후 교육과정 또한 참고하여 이수할 수 있으며 해당 교육과정상 이수구분에 따라 인정받을 수 있습니다. 트랙제 → 학과제 변경학생은 2021학년도 교육과정 이수를 원칙으로 합니다.
Basic [기초]	Formerly 'Fundamental' courses. Each field has [Required], [Elective], [AI Required] basic courses. Basic [Elective] requirements are designated by each department(school). 구) 계열기초 교과. 각 계열별 [기초필수], [기초선택], [AI 기초필수] 교과가 있습니다. [기초선택] 교과는 각 학과(부)별 요건이 별도로 지정되어 있습니다.
Liberal Arts [교양]	In Liberal Arts, there are ① Korean ② English ③ Liberal Arts courses, and each section has separate requirements. 교양 영역에는 ① 한국어 ② 영어 ③ Liberal Arts(교양) 세가지 분야가 있고, 각 분야별 별도의 학점이 설정되어 있습니다.
Major [전공] Double Major [복수전공] Minor [부전공]	All students must have one major from sophomore. However, students can have double major and minor and they are optional. 모든 학생은 2학년부터 주전공을 필수적으로 선택하게 되어 있고, 복수전공과 부전공은 선택사항입니다.
Prerequisite [선이수] Identical [동일교과]	**[Prerequisite]** If course A has a prerequisite course B, course B should be completed before taking course A. **[Identical]** If course C and course D are identical, completing course C will be regarded as completing course D **[선이수교과]** A 교과의 선이수 교과가 B인 경우, A 교과를 이수하기 위해서는 B 교과를 이수 완료하여야 합니다. **[동일교과]** C 교과와 D 교과가 동일교과인 경우, C 교과를 이수하면 D 교과를 이수한 것으로 간주됩니다.
Minimum credits [최소학점]	All credit requirements in each category is minimum credits. Each department(school) has own graduation requirements so you should carefully confirm your major graduation requirements. 각 영역별로 학교에서 정한 최소 학점이 설정되어 있고, 각 학과(부)에서 영역별로 졸업요건을 별도로 설정했습니다. 반드시 각 학과(부)별 졸업요건을 확인해주세요.
Free Elective [자유선택]	All courses that are not counted in [Basic], [Liberal Arts], [Major/Double Major/Minor] will be counted in [Free elective] courses. [기초], [교양], [전공/복수전공/부전공]으로 인정되지 않은 학점은 [자유선택]으로 인정됩니다.
Semester [개설학기]	Semester offered in each page is plan of each department(school). Course opening semester is subject to change according to various circumstances. 각 페이지에 있는 개설학기는 각 학과(부)의 개설 '계획'입니다. 개설학기는 여러 상황에 따라 변경될 수 있습니다.

Instructions [교육과정 설명서]

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 30 Credits
	Elective 선택(학과 지정)	13	Complete basic elective courses at least 13 credits including Applied Linear Algebra(3) and Differential Equations(3)	
Major 전공	Required 필수	27	Refer to Required course list below	At least 48 Credits
	Elective 선택	21	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		19	All courses acceptable	At least 19 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			13 credits	6 credits	-
1	MTH112	Calculus II (3)	○		
2	PHY103	General Physics II (3)	○		
3	CHM102	General Chemistry II (3)	○		
4	PHY108	General Physics Lab II (1)	○		
5	CHM106	General Chemistry Lab II (1)	○		
6	MTH201	Differential Equations (3)	●	●	
7	MTH203	Applied Linear Algebra (3)	●	●	
8	MTH211	Statistics (3)	○		
9	MGT102	Entrepreneurship (3)	○		
10	IE101	Introduction to Data Science(3)	○		
11	ITP117	Introduction to AI Programming II (3)	○		
12	ITP111	Probability & Random Process (3)	○		
13	ITP112	Discrete Mathematics (3)	○		
14	UNI101	Understanding Major (1) **Mechanical Engineering and Future**	○		

●: Required ○: Elective ◑: Recommended, ( ): credits

01. Graduation Requirement [졸업 이수요건]

All students must check each department(school) graduation requirements. You must complete at least minimum credits for each category. Also see the overall graduation requirements on next page.
모든 학생은 졸업을 위하여 각 학과(부)별 졸업 이수요건을 확인하여야 합니다. 각 영역별 최소학점 이상을 이수하여야 합니다. 다음 페이지에 있는 계열별 졸업 요건도 반드시 함께 확인하시기 바랍니다.

02. Basic Requirement [기초 이수요건]

Each department(school) has basic course requirments for major/double major/minor. Major requirements will be counted as 'Basic elective'. If there are double major and minor requirements, completed credits will be counted as free elective.
각 학과(부)에는 전공/복수전공/부전공 기초 교과 이수 요건이 있습니다. 각 전공(Major) 이수요건은 기초선택 요건으로 인정되며, 복수전공/부전공에 필수 요건이 있는 학과(부)의 경우 해당 교과 이수시 해당 학점은 자유선택으로 인정됩니다.

3. Curriculum [기계공학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Mechanical Engineering	27	21	**48**	18	18	**36**	9	9	**18**

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp.	Remarks	Semester
UEE201	Introduction to Environmental Engineering 환경공학개론	○	○	○	3-3-0		1
UEE202	Earth and Environmental Sciences 지구환경과학	○	○	○	3-3-0		1
UEE203	Introduction to Civil Engineering 건설공학개론	○	○	○	3-3-0		1
UEE204	Introduction to Urban Planning 도시계획개론	○	○	○	3-3-0		1
UEE205	Introduction to Natural Hazards 자연재해개론	○	○	○	3-3-0		1
UEE490	Graduate Thesis 졸업논문	○	-	-	0 credit		1,2
Total		**15**	**15**	**15**			

* Double major students can choose 4 subjects out of 5 required courses above, and minor for 2 subjects.

03. Credit Requirements [전공/복수전공/부전공 이수학점]

Major, Double Major, Minor has [Required] and [Elective] courses. You must complete certain credits in Required and Elective courses.
전공/복수전공/부전공에는 [필수교과]와 [선택교과]가 있습니다. 각 필수교과, 선택교과 중에서 일정 학점 이상을 이수하여야 합니다.

04. Course List (교과목록)

[Required] and [Elective] courses are listed by each department(school). Also, read carefully of the captions written below the list. The ○ notation in the list means a course that is only counted by a particular major type. Ex) If there are no circles on [Minor] courses, those courses will not be counted as minor credits. It will be counted as free elective courses.
각 학과(부)별로 [필수교과], [선택교과]가 표기되어 있습니다. 과목 목록 하단에 주석이 있는 경우 자세히 읽어보시기 바랍니다. 목록에 있는 ○ 표기는 특정 전공 유형에게만 인정되는 교과를 의미합니다. 예를 들어, 부전공에 ○ 표기가 안되어 있으면 부전공 학점으로 인정받을 수 없고 자유선택으로만 인정 가능합니다.

4. Curriculum Change [교육과정 변경사항]

2021	→	2022
〈NEW〉	→	UEE337 Building Collapse and Safety Inspection Techniques 건물 붕괴와 안전진단 기술
UEE335 Structural Engineering Lab 구조공학실험		〈Closed〉 Substitution[대체과목]: UEE337
UEE354 Disaster Risk Analysis 재난위험성 분석		〈Closed〉 Substitution[대체과목]: UEE352
UEE451 Weather Analysis and Prediction 날씨분석 및 예측		〈Closed〉 Substitution[대체과목]: UEE205

5. Curriculum Map [교육과정 이수 체계도]

Freshman		Sophomore		Junior		Senior	
Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
Required Basic Courses	Elective Basic Courses	Classical Mechanics I	Classical Mechanics II	Quantum Physics I	Quantum Physics II	Thermal and Statistical Physics II	Fluid Physic
	General Physics II	Electro-magnetism I	Electro-magnetismII	Computational Physics	Thermal and Statistical Physics I	Introduction to Plasma Physics	Nuclear and Elementary Particle Physics
	General Physics Lab II	Modern Physics	Mathematical Physics	Physics Lab II	Solid State Physics I	Biological Physics	Introduction to Beam Physics
	Calculus II	Applied Linear Algebra	Physics Lab I	Astrophysics :Stars and Blackholes	Astrophysics :Galaxies and the Universe	Solid Physics II :Quantum Materilas	Introduction to Theoretical Physics

05. Curriculum Change [교육과정 변경사항]

Changes from 2025 curriculum to 2026 curriculum will be listed.
2025학년도 교육과정 대비 2026학년도 변경사항이 기재되어 있습니다.

06. Curriculum Map [교육과정 이수 체계도]

Recommended curriculum path is suggested by each department (school)
각 학과(부)별 권장 이수 체계도가 각 학과(부)별로 기재되어 있습니다.

Graduation Requirements

■ Engineering Field (이공계열)

※ Below credits are minimum requirements for each category (각 영역별로 기재된 학점은 최소 충족 학점임)

Category		Course List		Credits		Total (Credits)
Basic 기초	Required 기초필수	Calculus I		3		14
		General Physics I		3		
		General Chemistry I		3		
		General Biology		3		
		General Physics Lab I		1		
		General Chemistry Lab I		1		
	Elective 기초선택	Follow each department(school) requirements		At least 10		At least 10
	AI Required AI 기초필수	Introduction to AI Programming I		Choose 1 (3 credits)	6	At least 6
		Mathematical Thinking for AI				
		Introduction to AI Programming Ⅱ		3		
Liberal Arts 교양	Korean 한국어	Korean Students	Korean Writing	2	2	At least 18
		International Students	Korean Ⅰ	Choose 1 (2 credits)		
			Korean Ⅱ			
	English 영어	[For students admitted from the Class of 2026 onward] Completion of two Advanced courses (one per area) Prerequisite: Intermediate course completion ※ See page 20 for details.		4		
	Liberal Arts 교양	Take 12 credits in Liberal Arts Category		12		
Major 전공	AI Application AI 응용	AI Application [AI 응용]		6		At least 6
	Major 전공 *Refer to each department(school) requirements	Common Major Core [공통전공기초]		(12)*		
		Major [전공]		At least 48		At least 51
		Internship (Choose one among Research, Industrial, Venture Creation, Co-op)		3		
		Double Major [복수전공] (Optional)		At least 36		-
		Minor [부전공] (Optional)		At least 18		
Free Elective 자유선택		All courses acceptable		Follow Each department(school) requirements		
Leadership 리더십프로그램		UNIST Leadership Program		6AU		
Total 124 credits / 6AU						

*전공학과별 졸업이수요건(AI 기초필수, AI 응용, 공통전공기초 과목 포함) 추후 공지 예정입니다.

*Graduation requirements by major, including AI required courses, AI application courses, and Common Major Core courses, will be announced later.

*공통전공기초는 전공 선택 전·후에 전공 구분 없이 각 전공의 기초 교과목을 이수할 수 있도록 구성된 교과군임. 학생은 공통전공기초를 총 12학점 필수 이수하며, 이수 과목은 추후 선택 전공에서 전공필수 또는 전공선택으로 인정될 수 있음. 전공으로 인정되지 않는 과목은 자유선택학점으로 인정됨.

*Common Major Core refers to a group of courses designed to allow students to complete foundational courses across different majors before or after selecting their major. Students are required to complete 12 credits of Common Major Core courses. Completed courses may be recognized as major required or major elective credits in the student's selected major. Courses that are not recognized toward the major will be counted as free elective credits.

*영역명 변경: Language(언어) → Korean(한국어) (2026학년도부터 적용)

*Area Name Change: Language → Korean (Effective from the 2026 Academic Year)

■ Business Administration Field (경영계열)

※ Below credits are minimum requirements for each category (각 영역별로 기재된 학점은 최소 충족 학점임)

Category		Course List		Credits		Total (Credits)
Basic 기초	Required 기초필수	Calculus I		3		6
		General Physics I	Choose 1	3		
		General Chemistry I				
		General Biology				
	Elective 기초선택	Follow each department(school) requirements		At least 16		At least 16
	AI Required AI 기초필수	Introduction to AI Programming I		Choose 1 (3 credits)	6	At least 6
		Mathematical Thinking for AI				
		Introduction to AI Programming Ⅱ		3		
Liberal Arts 교양	Korean 한국어	Korean Students	Korean Writing	2	2	At least 18
		International Students	Korean Ⅰ	Choose 1 (2 credits)		
			Korean Ⅱ			
	English 영어	[For students admitted from the Class of 2026 onward] Completion of two Advanced courses (one per area) Prerequisite: Intermediate course completion ※ See page 20 for details.		4		
	Liberal Arts 교양	Take 12 credits in Liberal Arts Category		12		
Major 전공	AI Application AI 응용	AI Application [AI 응용]		6		At least 6
	전공 *Refer to each department (school) requirements	Common Major Core [공통전공기초]		(12)*		
		Major [전공]		At least 48		At least 51
		Internship (Choose one among Research, Industrial, Venture Creation, Co-op)		3		
		Double Major [복수전공] (Optional)		At least 36		-
		Minor [부전공] (Optional)		At least 18		
Free Elective 자유선택		All courses acceptable		Follow Each department(school) requirements		
Leadership 리더십프로그램		UNIST Leadership Program		6AU		

Total 124 credits / 6AU

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*Common Major Core refers to a group of courses designed to allow students to complete foundational courses across different majors before or after selecting their major. Students are required to complete 12 credits of Common Major Core courses. Completed courses may be recognized as major required or major elective credits in the student's selected major. Courses that are not recognized toward the major will be counted as free elective credits.

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*Area Name Change: Language → Korean (Effective from the 2026 Academic Year)

■ Major / Double Major / Minor credit requirements of each department(school) [학과(부)별 전공 / 복수전공 / 부전공 전공 요구 학점]

College 단과대학	Department(School) 학과(부)	Major 전공			Double Major 복수전공			Minor 부전공		
		R	E	Total	R	E	Total	R	E	Total
College of Engineering 공과대학	Department of Mechanical Engineering 기계공학과	24	24	48	18	18	36	9	9	18
	Department of Civil, Urban, Earth, and Environmental Engineering 지구환경도시건설공학과	15	39	54	12	24	36	6	12	18
	Department of Materials Science and Engineering 신소재공학과	21	30	51	21	18	39	12	6	18
	School of Energy and Chemical Engineering 에너지화학공학과	33	18	51	33	6	39	18	0	18
	Department of Nuclear Engineering 원자력공학과	27	27	54	15	21	36	3	15	18
College of Information & Biotechnology 정보바이오 융합대학	Department of Design 디자인학과	15	33	48	15	21	36	12	6	18
	Department of Biomedical Engineering 바이오메디컬공학과	21	33	54	15	24	39	12	6	18
	Department of Industrial Engineering 산업공학과	24	24	48	15	21	36	9	9	18
	Department of Biological Sciences 생명과학과	26	28	54	14	22	36	11	7	18
	Department of Electrical Engineering 전기전자공학과	21	27	48	18	18	36	18	0	18
	Department of Computer Science and Engineering 컴퓨터공학과	24	24	48	18	21	39	15	15	30
College of Natural Sciences 자연과학대학	Department of Physics 물리학과	24	30	54	18	18	36	12	6	18
	Department of Mathematical Sciences 수리과학과	30	24	54	15	21	36	12	6	18
	Department of Chemistry 화학과	33	24	57	18	18	36	12	6	18
-	School of Business Administration 경영과학부	21	27	48	21	15	36	12	6	18

※ R: Required (필수) / E: Elective (선택)

※ Double Major and Minor are optional. Students can apply for Double Major and Minor in their 3rd semester.
복수전공, 부전공은 선택사항이며 3학기에 신청 가능.

■ Graduation Requirements of each department(school) [학과(부)별 졸업과제]

College 단과대학	Department(School) 학과(부)	Requirements
College of Engineering 공과대학	Department of Mechanical Engineering 기계공학과	MEN490 Thesis Study [졸업연구] (3 credits)
	Department of Civil, Urban, Earth, and Environmental Engineering 지구환경도시건설공학과	CUEE490 Graduate Thesis [졸업논문] (0 credits)
	Department of Semiconductor Engineering 반도체공학과	SSE690 Master's Research [석사논문연구] (3 credits)
	Department of Materials Science and Engineering 신소재공학과	Complete at least 3 credits of Research Internship or Coop internship and submit internship report
	School of Energy and Chemical Engineering 에너지화학공학과	ECHE490 Undergraduate Thesis Research [학사졸업논문연구] (3 credits)
	Department of Nuclear Engineering 원자력공학과	NE490 Graduate Thesis [졸업논문] (0 credits)
College of Information & Biotechnology 정보바이오 융합대학	Department of Design 디자인학과	Complete course: DES402 Product Service System Design [제품 서비스 시스템 디자인] (3 credits)
	Department of Biomedical Engineering 바이오메디컬공학과	Complete course: BME490 Capstone Design [캡스톤디자인] (3 credits)
	Department of Industrial Engineering 산업공학과	Complete course: IE450 Project Lab [프로젝트랩] (3 credits)
	Department of Biological Sciences 생명과학과	BIO490 Thesis Research [졸업논문] (3 credits)
	Department of Electrical Engineering 전기전자공학과	EEE490 Undergraduate Research [졸업연구] (3 credits)
	Department of Computer Science and Engineering 컴퓨터공학과	CSE401 Research in Computer Science and Engineering [졸업연구] (3 credits)
College of Natural Sciences 자연과학대학	Department of Physics 물리학과	PHY490 Graduate Thesis [졸업논문] (0 credits)
	Department of Mathematical Sciences 수리과학과	MTH490 Graduate Thesis [졸업논문] (0 credits)
	Department of Chemistry 화학과	CHM400 Thesis [졸업논문] (3 credits)
-	School of Business Administration 경영과학부	Complete course: MGT499 Strategic Management [경영전략] (3 credits)

Basic Courses [기초]

Category			Course Code	Course Title	Cred. -Lect. -Exp.	Remarks	Semester
-	ENG	BUS					
Required (필수)	O	O	MTH111	Calculus Ⅰ 미적분학 Ⅰ	3-3-1		1
	O	O	ITP107	Introduction to AI Programming Ⅰ 기초 인공지능 프로그래밍 Ⅰ	3-2-2		1,2
	O	O	MTH113	Mathematical Thinking for AI AI를 위한 수학적 사고	3-3-0		1,2
	O	O	ITP117	Introduction to AI Programming Ⅱ 기초 인공지능 프로그래밍 Ⅱ	3-2-2		1,2
	O	O	PHY101 (PHY102)	General Physics Ⅰ (General Physics Ⅰ H) 일반물리학 Ⅰ (고급일반물리학 Ⅰ)	3-3-0	() is a honor course	1
	O		CHM101	General Chemistry Ⅰ 일반화학 Ⅰ	3-3-0		1
	O		BIO101 (BIO103)	General Biology (Advanced General Biology) 일반생물 (고급일반생물학)	3-3-0	() is a honor course	1,2
	O	X	CHM105	General Chemistry Lab Ⅰ 일반화학실험 Ⅰ	1-0-2		1
	O	X	PHY107	General Physics Lab Ⅰ 일반물리학실험 Ⅰ	1-0-2		1
Elective (선택)			MTH112	Calculus Ⅱ 미적분학 Ⅱ	3-3-1		2
			MTH201	Differential Equations 미분방정식	3-3-0	[PRE] MTH111	1,2
			MTH203	Applied Linear Algebra 응용선형대수	3-3-0		1,2
			MTH211	Statistics 통계학	3-3-0		1,2
			PHY103 (PHY104)	General Physics Ⅱ (General Physics Ⅱ H) 일반물리학 Ⅱ (고급일반물리학 Ⅱ)	3-3-0	() is a honor course	2
			PHY108	General Physics Lab Ⅱ 일반물리학실험 Ⅱ	1-0-2		2
			CHM102	General Chemistry Ⅱ 일반화학 Ⅱ	3-3-0		2
			CHM106	General Chemitry Lab Ⅱ 일반화학실험 Ⅱ	1-0-2	[PRE] CHM101, CHM105	2
			ITP111	Probability and Random Processes 확률과 랜덤 프로세스	3-3-0		1,2
			ITP112	Discrete Mathematics 이산수학	3-3-0		2
			MGT103	Entrepreneurship 기업가정신	3-3-0		1,2
			IE101	Introduction to Data Science 데이터사이언스 개론	3-3-0		2
			MGT106	Economics 경제원론	3-3-0	Only for Business Administration Field	1

Basic Requirements

Category			Course Code	Course Title	Cred. -Lect. -Exp.	Remarks	Semester
-	ENG	BUS					
Understanding Major 전공의 이해 교과			UNI101	Mechanical Engineering and Future 기계공학과 미래	1-1-0	Mechanical Engineering 기계공학과	2
			UNI102	What you may (not) want to know about cities and environment 알쓸도환: 알아두면 쓸데 있는 도시와 환경이야기	1-1-0	Civil, Urban, Earth, and Environmental Engineering 지구환경도시건설공학과	2
			UNI103	Trend in Materials Science and Engineering 재료과학 맛보기	1-1-0	Materials Science and Engineering 신소재공학과	2
Understanding Major[1] 전공의 이해 교과			UNI104	Trends in Energy & Chemical Engineering 에너지화학공학소개	1-1-0	Energy and Chemical Engineering 에너지화학공학과	2
			UNI105	The future of Nuclear Engineering 원자력의 미래	1-1-0	Nuclear Engineering 원자력공학과	2
			UNI106	What is Design? 디자인이란?	1-1-0	Design 디자인학과	2
			UNI107	BME to change the world 세상을 바꾸는 바이오메디컬공학	1-1-0	Biomedical Engineering 바이오메디컬공학과	2
			UNI108	Industrial Engineering Relay Seminar 산업공학 릴레이 세미나	1-1-0	Industrial Engineering 산업공학과	2
			UNI109	Emerging Issues in Biological Sciences 첨단 생명과학 연구분야 소개	1-1-0	Biological Sciences 생명과학과	2
			UNI110	Introduction to Modern Electrical Engineering 최신전기전자공학소개	1-1-0	Electrical Engineering 전기전자공학과	2
			UNI111	Introduction to Computer Science and Engineering 컴퓨터공학 소개	1-1-0	Computer Science and Engineering 컴퓨터공학과	2
			UNI112	Physics & Innovative Technology 물리학과 첨단기술	1-1-0	Physics 물리학과	2
			UNI113	Introduction to Modern Mathematics 현대수학입문	1-1-0	Mathematical Sciences 수리과학과	2
			UNI114	Why Chemistry? 왜 화학인가?	1-1-0	Chemistry 화학과	1
			UNI115	Principles of management 경영원론	1-1-0	Business Administration 경영과학부	2

※ ENG: Engineering Field, BUS: Business Administration Field
※ MGT106 Economics is not basic elective course for engineering field students, but when students take the course it can be counted as free elective.
1) There are no restrictions in taking understanding major courses, but for graduation requirement, only 2 credits will be counted.

AI Application [AI 응용]

■ Detailed courses will be announced later.
■ 세부 교과목은 추후 공지 예정입니다.

Common Major Core [공통전공기초]

■ Detailed courses will be announced later.
■ 세부 교과목은 추후 공지 예정입니다.

School of Liberal Arts [인문학부]

■ School Introduction [학부소개]

With a view to realizing UNIST's vision of educating global leaders in science and technology who will contribute to the prosperity of humankind, the School of Liberal Arts (SLA) is committed to nurturing the creativity, critical thinking and communication skills of students. The SLA offers undergraduate courses in humanities, social sciences, visual arts, and musical instrument performances including piano and violin. The SLA faculty and staff members are dedicated to providing quality teaching and cultivating the various talents of individual students. In an effort to assure UNIST students of the best education, SLA will continue to diversify its curriculum and extend collaboration with other departments and institutions.

■ Liberal Arts Curriculum [교양 교육과정]

Category	Course Code	Course Title	Cred. -Lect. -Exp.	Remarks	Semester
English	ENG110	English Listening&Speaking(Intermediate) 영어 듣기&말하기(중급)	2-1-2	Before the 2026 cohort : 2 required courses by level Level 3 (L&S) : ENG111 required (incl. 2026 cohort) Level 3 (R&W) : ENG114 required (incl. 2026 cohort)	1,2
	ENG111	English Listening&Speaking(Advanced) 영어 듣기&말하기(상급)	2-1-2		1,2
	ENG113	English Reading&Writing(Intermediate) 영어 읽기&쓰기(중급)	2-1-2		1,2
	ENG114	English Reading&Writing(Advanced) 영어 읽기&쓰기(상급)	2-1-2		1,2
	ENG115	English Listening&Speaking (Intermediate, 0 credit) 영어 듣기&말하기 (중급, 0학점)	0-1-2	**2026 cohort and onward: 2 advanced courses required** Levels 1-2 (L&S) : ENG115 required → prerequisite for ENG116 Levels 1-2 (R&W) : ENG117 required → prerequisite for ENG118 * ENG115-ENG118 : Not available to pre-2026 cohort or Level 3 students (incl. 2026 Lv3)	1,2
	ENG116	English Listening&Speaking (Advanced, Prereq: Intermediate) 영어 듣기&말하기 (상급, 선이수: 중급)	2-1-2		1,2
	ENG117	English Reading&Writing (Intermediate, 0 credit) 영어 읽기&쓰기 (중급, 0학점)	0-1-2		1,2
	ENG118	English Reading&Writing (Advanced, Prereq: Intermediate) 영어 읽기&쓰기 (상급, 선이수: 중급)	2-1-2		1,2
Korean	LNG100	Korean Writing 한국어 글쓰기	2-1-2	Only for Korean Students *LNG100 will be offered in Korean	1,2
	LNG203	Korean I 한국어 I	2-1-2	Only for International Students (Non-Korean Students)	1,2
	LNG204	Korean II 한국어 II	2-1-2		1,2

* Area Name Change: Language → Korean (Effective from the 2026 Academic Year)
* 영역명 변경: Language(언어) → Korean(한국어) (2026학년도부터 적용)

School of Liberal Arts

Category	Course Code	Course Title	Cred. -Lect. -Exp.	Remarks	Semester
Liberal Arts	SLA100	First-Year Seminar 1학년 세미나	3-3-0		1,2
	SLA111	Understanding Visual Arts 시각예술의 이해	3-2-1		1,2
	SLA121	Music and Creativity, Piano 음악과 창의성, 피아노	3-1-2		1,2
	SLA122	Music and Creativity, Strings 음악과 창의성, 현악	3-1-2		1,2
	SLA123	Contemporary Piano 컨템포러리 피아노	3-1-2		1,2
	SLA124	Understanding Western Music 서양음악의 이해	3-3-0		1,2
	SLA125	Violin Fundamentals 바이올린의 기초	3-1-2		1,2
	SLA126	Music Appreciation 음악의 이해	3-2-1		1,2
	SLA131	Literature and Creativity 문학과 창의성	3-3-0		1,2
	SLA132	Drama 드라마	3-3-0		1,2
	SLA133	Literature and Science 문학과 과학	3-3-0		1,2
	SLA141	Media and Culture 미디어와 문화	3-3-0		1,2
	SLA151	History of Korean Civilization 한국문명사	3-3-0		1,2
	SLA152	Evolution of Civilization 문명의 발전	3-3-0		1,2
	SLA153	Foundations of East Asian Civilization 동아시아 문명의 기초	3-3-0		1,2
	SLA154	History of Modern East Asia 동아시아의 근현대사	3-3-0		1,2
	SLA161	Introduction to Philosophy 철학개론	3-3-0		1,2
	SLA171	Science of Human Behavior 인간행동의 과학	3-3-0		1,2
	SLA181	Discovering Anthropology 인류학의 발견	3-3-0		1,2
	SLA190	Introduction to Linguistics 언어학개론	3-3-0		1,2
	SLA211	Design Thinking for Healthcare Innovation 헬스케어 혁신을 위한 디자인 씽킹	3-2-1	2026학년도 과목명 변경 Course title updated from AY2026	1,2
	SLA212	Visual Culture and Art 시각 문화와 예술	3-2-1		1,2

Category	Course Code	Course Title	Cred. -Lect. -Exp.	Remarks	Seme ster
Liberal Arts	SLA213	Themes of Contemporary Art 현대 미술의 테마	3-2-1		1,2
	SLA221	Advanced Piano 피아노 연주	3-1-2		1,2
	SLA222	Chamber Music 실내악	3-1-2		1,2
	SLA225	Intermediate Violin 중급 바이올린	3-1-2		1,2
	SLA231	Korean Literature and Gender 한국문학과 젠더	3-3-0		1,2
	SLA232	Russian Literature 러시아문학	3-3-0		1,2
	SLA234	Contemporary Korean Fiction 한국현대소설	3-3-0		1,2
	SLA235	Introduction to Digital Humanities 디지털 인문학 입문	3-2-1		1,2
	SLA241	Effective Communication 효과적 커뮤니케이션	3-3-0		1,2
	SLA242	Media Technology and Human Values 미디어기술과 인간가치	3-3-0		1,2
	SLA243	Global Politics and Media 국제 정치와 미디어	3-3-0		1,2
	SLA251	History of Modern Korea 한국 근현대사	3-3-0		1,2
	SLA252	History of Contemporary World 현대 세계사	3-3-0		1,2
	SLA253	History of Science 과학기술사	3-3-0		1,2
	SLA254	Understanding Korea 한국의 이해	3-3-0		1,2
	SLA255	Introduction to Science, Technology and Society 과학기술학(STS) 개론	3-3-0		1,2
	SLA256	U.S. History 미국사	3-3-0		1,2
	SLA257	History of International Relations 국제관계사	3-3-0		1,2
	SLA258	Economic Anthropology 경제 인류학	3-3-0		1,2
	SLA261	Critical Thinking 비판적 사고	3-3-0		1,2
	SLA262	Philosophy of Religion 종교철학	3-3-0		1,2
	SLA263	Fundamental Issues of Philosophy 철학의 근본문제	3-3-0		1,2

Category	Course Code	Course Title	Cred. -Lect. -Exp.	Remarks	Seme ster
Liberal Arts	SLA271	Cognitive Science 인지과학	3-3-0		1,2
	SLA281	Society and Culture 사회와 문화	3-3-0		1,2
	SLA282	Understanding Popular Culture 대중문화의 이해	3-3-0		1,2
	SLA283	Gender and Society 젠더와 사회	3-3-0		1,2
	SLA292	Introduction to English Styles 영문체 개론	3-3-0		1,2
	SLA293	English Language & Culture 영어와 문화	3-3-0		1,2
	SLA298	Global English in Engineering Community 글로벌영어와 공학	3-3-0		1,2
	SLA310	Topics in Arts 예술 특강	3-3-0		1,2
	SLA311	Art, Community, Environment 예술, 공동체, 환경	3-2-1		1,2
	SLA320	Topics in Music 음악 특강	3-1-2		1,2
	SLA321	19th Century Piano Music 19세기 피아노 음악	3-1-2		1,2
	SLA322	Violin Seminar 바이올린 세미나	3-1-2		1,2
	SLA330	Topics in Literature 문학 특강	3-3-0		1,2
	SLA332	Dostoevsky and Tolstoy 도스토옙스키와톨스토이	3-3-0		1,2
	SLA333	AI and Storytelling AI와 스토리텔링	3-2-1		1,2
	SLA334	Literary Understanding of Multimodal Generation 멀티모달 생성의 문학적 이해	3-2-1		1,2
	SLA340	Topics in Communication Studies 커뮤니케이션특강	3-3-0		1,2
	SLA341	Computer Mediated Communication 컴퓨터매개커뮤니케이션	3-3-0		1,2
	SLA342	Personality, Self, and Communication: IntrapersonalCommunication 자아커뮤니케이션	3-3-0		1,2
	SLA350	Topics in History 역사특강	3-3-0		1,2
	SLA351	History Through Film 영화를통한역사	3-3-0		1,2
	SLA352	History of Modern Europe 유럽의 근현대사	3-3-0		1,2

Category	Course Code	Course Title	Cred. -Lect. -Exp.	Remarks	Seme ster
Liberal Arts	SLA360	Topics in Philosophy 철학특강	3-3-0		1,2
	SLA361	Metaphysics 형이상학	3-3-0		1,2
	SLA362	Ethics 윤리학	3-3-0		1,2
	SLA364	Logic 논리학	3-3-0		1,2
	SLA370	Topics in Psychology 심리학특강	3-3-0		1,2
	SLA371	Positive Psychology and Practice 긍정심리학과 실천	3-3-0	Newly offered in AY 2026 2026학년도 신규 개설	1,2
	SLA380	Topics in Anthropology 인류학특강	3-3-0		1,2
	SLA382	AI and Society 인공지능(AI)과사회	3-3-0		1,2
	SLA384	Human Evolution 인류의진화	3-3-0		1,2
	SLA385	Medicine and Society 의료와 사회	3-3-0	Newly offered in AY 2026 2026학년도 신규 개설	1,2
	SLA398	SLA Special Topics Ⅰ SLA특강	Variable		1,2
	SLA399	SLA Special Topics Ⅱ SLA특강Ⅱ	Variable		1,2
	SLA451	History, Technoscience, and the Public 공적영역과테크노사이언스	3-3-0		1,2
	SLA461	Philosophy of Science 과학철학	3-3-0		1,2
	SLA481	Risk Society and the 21st Century 21세기와위험사회	3-3-0		1,2
	SLA490	Writing in Academic Disciplines 전공영어쓰기	3-3-0		1,2
	SLA491	Technical Writing in English 영어논문작성법	3-3-0		1,2

* **Language & Korean Areas - Common [공통사항]**

(Applicable to students admitted in or after the 2021 cohort)

Restrictions for Korean and international students apply to students admitted in or after the 2021 cohort.

[적용 대상: 2021학번부터 / 내국인 및 외국인에 대한 수강 제한은 2021학번부터 적용됨]

* **Language**

(Applicable to students admitted up to the 2025 cohort)

Students may fulfill the requirement through credit exchange by completing second foreign language courses.

[적용 대상: 2025학번까지 / 학점교류를 통해 제2외국어 교과목을 이수하여 요건을 충족할 수 있음]

■ Language Exemption Guideline [언어 영역 면제 기준]

Students who meet language exam criteria below will have their language requirements exempted.
아래의 어학 시험 기준을 충족하는 학생은 언어 영역 수업 이수가 면제됩니다.

2026학번부터 언어 영역이 한국어 영역으로 변경됨에 따라, 기존 언어 영역 면제 기준은 2026학번부터 적용되지 않습니다.
Beginning with the 2026 cohort, the Language Area is replaced by the Korean Language Area, and the previous language exemption guideline does not apply to students admitted in or after the 2026 cohort.

Category	Type of Exam	Score (Criteria)
Chinese 중국어	HSK	Level 3 or higher
Spanish 스페인어	DELE	A2 or higher
Japanese 일본어	JLPT	N3 or higher
German 독일어	Goethe -Zertifikat	A2 or higher
French 프랑스어	DELF	A2 or higher
Russian 러시아어	TORFL	Basic Level or higher
Korean (For International Students)	TOPIK	Level 2 or higher

■ English requirements by level [레벨별 이수 가이드]

All students are required to complete English courses according to their level.
Students entered from 2023 will have 'Listening & Speaking level' and 'Reading & Writing' level separately.
모든 학생은 레벨에 따라 영어 교과를 이수하여야 합니다.
2023년 입학생부터는 듣기&말하기 레벨과 읽기&쓰기 레벨이 각각 따로 부여됩니다.

▶ Students admitted in 2022 and earlier (2022학번 및 이전 학번)

Course Code	Course Title	Lev.1	Lev.2	Lev.3	Lev.4
-	English Camp (0 credit)	●	-	-	-
ENG110	English Listening & Speaking (Intermediate)	●	●	-	-
ENG111	English Listening & Speaking (Advanced)	-	-	●	-
ENG113	English Reading & Writing (Intermediate)	●	●	●	-
ENG114	English Reading & Writing (Advanced)	-			-

▶ Students admitted in 2023-2025 (2023-2025학번)

		English Listening & Speaking (ENG110, ENG111)			
		Lev.1	Lev.2	Lev.3	Lev.4
English Reading & Writing (ENG113, ENG114)	Lev.1	- English Camp - English Listening & Speaking (Intermediate) - English Reading & Writing (Intermediate)	-	-	-
	Lev.2	-	English Listening & Speaking (Intermediate)	English Listening & Speaking (Advanced)	Exemption
			English Reading & Writing (Intermediate)	English Reading & Writing (Intermediate)	English Reading & Writing (Intermediate)
	Lev.3	-	English Listening & Speaking (Intermediate)	English Listening & Speaking (Advanced)	Exemption
			English Reading & Writing (Advanced)	English Reading & Writing (Advanced)	English Reading & Writing (Advanced)
	Lev.4	-	English Listening & Speaking (Intermediate)	English Listening & Speaking (Advanced)	Exemption
			Exemption	Exemption	Exemption

School of Liberal Arts

▶ Students admitted in 2026 and later (2026학번 및 이후 학번)

* Listening&Speaking(L&S), Reading&Writing(R&W)
* 중급(Intermediate) = Int. / 상급(Advanced) = Adv.
* Prerequisite(선이수 과목) = Prereq

No.	Area		English Camp (0 credit)	Course Information							Remarks
				ENG115	ENG116	ENG111	ENG117	ENG118	ENG114	Required Courses	
	L&S	R&W		L&S (Int.) (0 credit)	L&S (Adv.) (Prereq: Int.)	L&S (Adv.)	R&W (Int.) (0 credit)	R&W (Adv.) (Prereq: Int.)	R&W (Adv.)		
1	Lev.1		O	O	O		O	O		4	Prerequisite : English Camp
2	Lev.2	Lev.2		O	O		O	O		4	
3	Lev.2	Lev.3		O	O				O	3	
4	Lev.2	Lev.4		O	O					2	R&W Exemption
5	Lev.3	Lev.2				O	O	O		3	
6	Lev.3	Lev.3				O			O	2	
7	Lev.3	Lev.4				O				1	R&W Exemption
8	Lev.4	Lev.2					O	O		2	L&S Exemption
9	Lev.4	Lev.3							O	1	L&S Exemption
10	Lev.4	Lev.4								0	All Exemption

*** 2026 cohort and onward [2026학번부터 적용]**

① Both advanced English courses in each respective area must be completed to satisfy the graduation requirement.
[영역별 영어 상급 과목을 2개 모두 이수해야 졸업요건 충족이 가능함]

② Students assigned to Level 1 or Level 2 must enroll in the 0-credit intermediate course. Failure to complete this 0-credit course will result in ineligibility to take credit courses.
[Level 1 및 Level 2 부여자는 중급 과목 중 0학점 과목을 수강해야 함. 0학점 과목 미이수 시 정규 학점 과목 이수가 불가함]

③ Students assigned to Level 3 are not allowed to register for advanced courses that have prerequisite requirements.
[Level 3 부여자는 선이수 요건이 지정된 상급 과목을 수강 신청할 수 없음]

*** Common [공통사항]**

① Level 4 students will have English courses exempted. (Applies to all students including students entered before 2021)
[Level 4 부여자는 영어 수업 이수 면제됨 - 2021학년도 이전 입학생들에게도 일괄 적용됨]

② Level 1 students must complete the English Camp prior to English course registration.
[Level 1 부여자는 영어 캠프 선이수 후 영어 과목 수강 신청이 가능함]

③ English native speakers may be exempted from English course requirements by submitting documents that verify at least three years of attendance or graduation from a high school in an English-speaking country (e.g., the U.S., U.K., Canada, Australia, New Zealand, or Ireland) and obtaining approval from the English course instructor.
Note: Only countries where English is the first language are recognized; countries where English is merely an official language and international schools are excluded.
[영어 원어민은 영어권 국가(예: 미국, 영국, 캐나다, 호주, 뉴질랜드, 아일랜드)에 소재한 고등학교에서 3년 이상 재학 또는 졸업한 사실을 증빙할 수 있는 서류(예: 졸업증명서)를 제출하고, 영어 교과 담당 교원의 승인을 받을 경우 영어 교과 이수가 면제됨.
※ 영어가 제1언어인 국가로 한정하며, 공용어 국가 및 국제학교는 제외함]

College of Engineering

Department of Mechanical Engineering
[기계공학과]

■ Department Introduction [학과소개]

Mechanical Engineering deals with numerous systems and has a variety of important applications such as automobiles, aircraft, ships, home appliances, electronic devices, power plants and so on. The mechanical systems and the fundamental science and technology of mechanical and aerospace engineering have made dramatic advances and high impacts on the global economies and the standard of living. In the track of mechanical and aerospace engineering, students are educated and trained to learn the underlying principles of mechanical and aerospace engineering and to apply the knowledge to real-world examples and case studies hands-on. Disciplines include thermodynamics, fluid mechanics, solid mechanics, dynamics, machine design, advanced materials processing, laser-assisted manufacturing, micro/nano machining, unmanned vehicle control, MEMS, biomedical products, controls and mechatronics, acoustics, tribology and so on.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 30 Credits
	Elective 선택[학과 지정]	13	Complete basic elective courses at least 13 credits including Applied Linear Algebra(3) and Differential Equations(3)	
Major 전공	Required 필수	24	Refer to Required course list below	At least 48 Credits
	Elective 선택	24	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		19	All courses acceptable	At least 19 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			13 credits	6 credits	–
1	MTH112	Calculus Ⅱ(3)	○		
2	PHY103	General Physics Ⅱ(3)	○		
3	CHM102	General Chemistry Ⅱ(3)	○		
4	PHY108	General Physics Lab Ⅱ(1)	○		
5	CHM106	General Chemistry Lab Ⅱ(1)	○		
6	MTH201	Differential Equations (3)	●	●	
7	MTH203	Applied Linear Algebra (3)	●	●	
8	MTH211	Statistics (3)	○		
9	MGT102	Entrepreneurship (3)	○		
10	IE101	Introduction to Data Science(3)	○		
11	ITP117	Introduction to AI Programming Ⅱ(3)	○		
12	ITP111	Probability & Random Process (3)	○		
13	ITP112	Discrete Mathematics (3)	○		
14	UNI101	Understanding Major (1) **Mechanical Engineering and Future**	○		

●: Required ○: Elective ◑: Recommended, ( ): credits

3. Curriculum [기계공학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Mechanical Engineering	24	24	**48**	18	18	**36**	9	9	**18**

*R: Required, E: Elective
* 전공필수 및 전공선택 이수학점 변경은 2024학번부터 소급적용함

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred –Lect –Exp.	Remarks	Seme ster
MEN210	Thermodynamics 열역학	○	○	○	3–3–0		1
MEN220	Fluid Mechanics 유체역학	○	○	○	3–3–0	[PRE] MEN220	2
MEN230	Solid Mechanics I 고체역학 I	○	○	○	3–3–0		1
MEN231	Solid Mechanics II 고체역학 II	○	○	○	3–3–0	[PRE] MEN230	2
MEN250	Mechanical Drawing and Lab 기계제도 및 실습	○	○	○	3–2–2		1
MEN370	Dynamics 동역학	○	○	○	3–3–0		1
MEN300	Mechanical Engineering Lab I 기계공학실험 I	○	○	○	3–1–4	[PRE] MEN231	2
MEN490	Thesis Study 졸업연구	○			3–0–6		1,2

※ Double Major: Take 6 courses(18 credits) among above courses excluding MEN490 Thesis Study.
복수전공: 졸업연구를 제외한 7과목 중 최소 6과목(18학점) 이수
※ Minor: Take 3 courses(9 credits) among above excluding MEN490 Thesis Study.
부전공: 졸업연구를 제외한 7과목 중 최소 3과목(9학점) 이수
※ Courses that are not required for Minor/Double Major can be counted as Elective course.
복수전공자, 부전공자에게 필수로 인정되지 않는 전공필수 과목을 이수했을 경우 전공선택으로 인정가능

Department of Mechanical Engineering

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp.	Remark	Semester
MEN211	Applied Thermodynamics 응용열역학	○	○	○	3-3-0	[PRE] MEN210	2
MEN301	Numerical Analysis 수치해석	○	○	○	3-2-2	[PRE] MTH201	2
MEN303	Applied Engineering Mathematics 응용공학수학	○	○	○	3-3-0		1
MEN310	Heat Transfer 열전달	○	○	○	3-3-0	[PRE] MEN210,MEN220	1
MEN320	Applied Fluid Mechanics 응용유체역학	○	○	○	3-3-0	[PRE] MEN220	1
MEN350	Manufacturing Processes and Lab 기계공작법 및 실습	○	○	○	3-2-2	[PRE] MEN230	1
MEN351	Machine Element Design 기계요소설계	○	○	○	3-3-0	[PRE] MEN231	2
MEN352	Creative Engineering Design I (Capstone Design) 창의적공학설계 I (캡스톤디자인)	○	○	○	3-1-4		2
MEN353	Manufacturing System Design & Simulation 생산시스템 설계 및 시뮬레이션	○	○	○	3-3-0		2
MEN371	Modeling and Analysis of Engineering Systems 시스템 모델링 및 분석	○	○	○	3-3-0		2
MEN372	Dynamic Systems and Control 시스템제어	○	○	○	3-3-0		2
MEN400	Mechanical Engineering Lab II 기계공학실험 II	○	○	○	3-1-4	[PRE] MEN231,MEN310, MEN370	1
MEN402	Introduction to Finite Element Method 유한요소법개론	○	○	○	3-3-0	[PRE] MEN231, MEN301 [Code Share] MEN531	2
MEN411	Combustion 연소공학	○	○	○	3-3-0	[PRE] MEN210, MEN220	1
MEN412	Air-Conditioning and Refrigeration 공기조화냉동	○	○	○	3-3-0	[PRE] MEN210	2
MEN413	Computational Fluid Dynamics 전산유체역학	○	○	○	3-3-0	[PRE] MEN301,MEN320	2
MEN414	Design of Fluid Thermal Systems 열유체시스템 설계	○	○	○	3-3-0	[PRE] MEN310	2
MEN415	Aerodynamics 공기역학	○	○	○	3-3-0	[PRE] MEN220	1
MEN420	Introduction to Aerosol Technology 에어로졸공학개론	○	○	○	3-3-0	[PRE] MEN220 [Code Share] MEN523	1
MEN431	Introduction to Plastic Deformation 소성학개론	○	○	○	3-3-0	[PRE] MEN231	1
MEN432	Introduction to Mechanics of Composite Materials 복합재역학개론	○	○	○	3-3-0	[PRE] MEN231	1
MEN441	Introduction to Optical Engineering 광공학개론	○	○	○	3-3-0	[Code Share] MEN544	2
MEN451	Introduction to MEMS MEMS 개론	○	○	○	3-3-0		2
MEN452	Creative Engineering Design II (Capstone Design) 창의적공학설계 II (캡스톤디자인)	○	○	○	3-1-4		1
MEN453	Computer Aided Engineering 컴퓨터이용공학	○	○	○	3-2-2		1

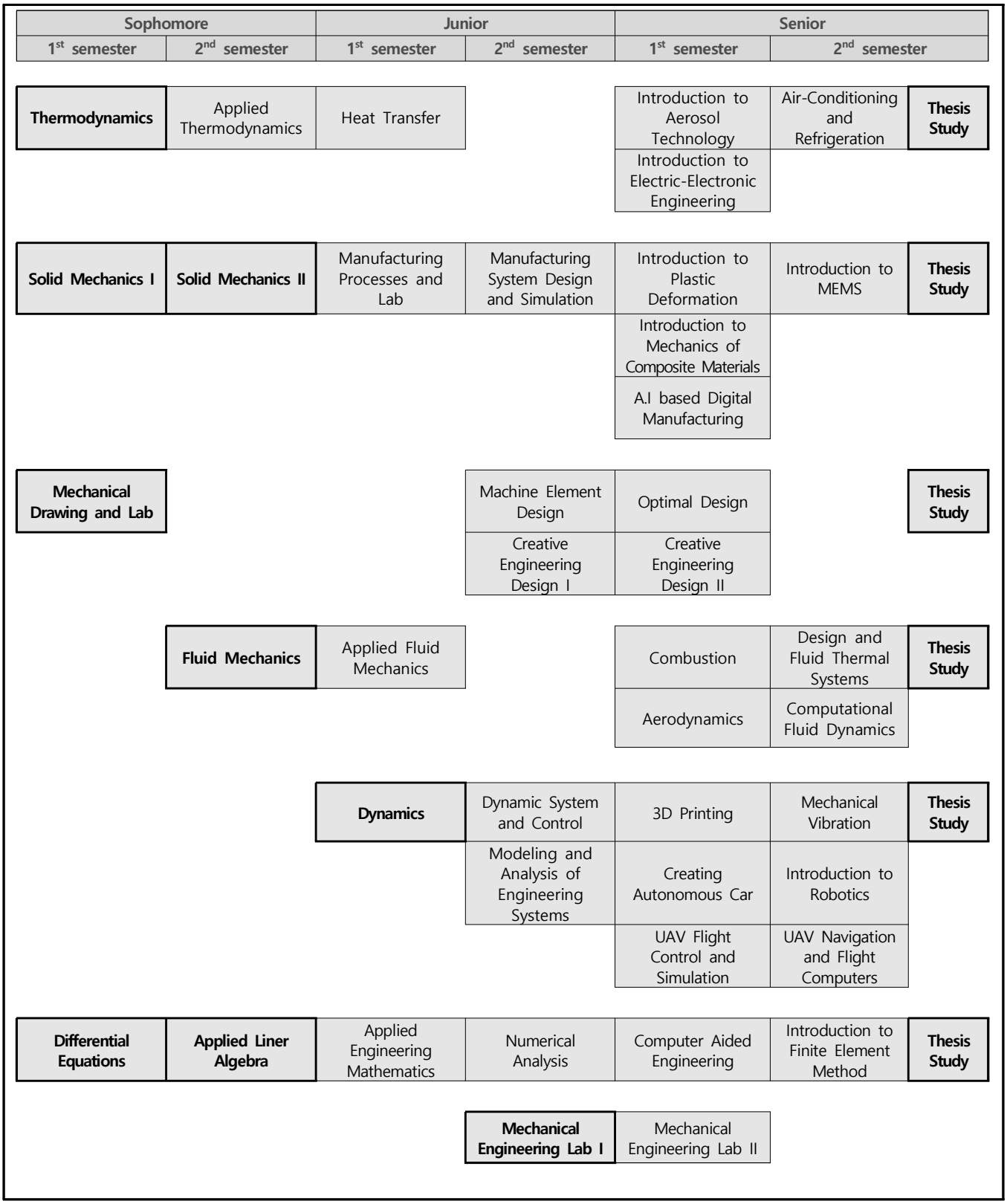
Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp.	Remark	Semester
MEN454	Optimal Design 최적설계	○	○	○	**3-3-0**	[Code Share] MEN601	1
MEN455	3D Printing 3D 프린팅	○	○	○	3-3-0		1
MEN456	Artificial Intelligence Based Digital Manufacturing AI 기반 디지털 제조 공학	○	○	○	3-3-0		1
MEN457	Introduction to Electric-Electronic Engineering 전기전자공학개론	○	○	○	3-3-0	[PRE] PHY103	1
MEN470	Mechanical Vibration 기계진동학	○	○	○	3-3-0	[PRE] MEN370	2
MEN471	Introduction to Robotics 로봇공학	○	○	○	3-3-0	[PRE] MEN370	2
MEN472	Creating Autonomous Car 자율주행 자동차 만들기	○	○	○	3-2-2	[PRE] MEN370,MEN372	1
MEN481	UAV Flight Control and Simulation 무인기 비행제어 및 시뮬레이션	○	○	○	3-3-0	[PRE] MEN370,MEN372	1
MEN482	UAV Navigation and Flight Computers 무인기 항법 및 운용	○	○	○	3-3-0	[PRE] MEN370,MEN372	2
MEN491	Special Topics in Mechanical Engineering Ⅰ 기계공학특론 Ⅰ	○	○	○	3-3-0		-
MEN492	Special Topics in Mechanical Engineering Ⅱ 기계공학특론 Ⅱ	○	○	○	3-3-0		-
MEN493	Special Topics in Mechanical Engineering Ⅲ 기계공학특론 Ⅲ	○	○	○	3-3-0		-
MEN494	Special Topics in Mechanical Engineering Ⅳ 기계공학특론 Ⅳ	○	○	○	3-3-0		-
MEN495	Special Topics in Mechanical Engineering Ⅴ 기계공학특론 Ⅴ	○	○	○	3-3-0		-
MSE316	Wearable smart healthcare electronic system 웨어러블 스마트 헬스케어 전자소자 시스템	○	○		3-2-2		

※ [PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

2025	→	2026
<NEW>	→	MEN441 Introduction to Optical Engineering 광공학개론 *MEN544 교과목과 학위과정 간 코드셰어
MEN454 Optimal Design 최적설계 [3-2-2]		MEN454 Optimal Design 최적설계 [3-3-0] *강의시간 및 실습시간 변경

5. Curriculum Map [교육과정 이수 체계도]



Department of Civil, Urban, Earth, and Environmental Engineering [지구환경도시건설공학과]

■ Department Introduction [학과소개]

Climate change and environmental pollution caused by global urbanization and industrialization have imposed an increasing threat to the entire future of mankind. With no surprise, studies on these issues are drastically gaining in importance. Civil, Urban, Earth, and Environmental Engineering is an interdisciplinary field of study th at is dedicated to education and research on the resilient protection of natural and built environments against disasters, as well as the sustainable development of urban society. In this field, the students will learn fundamental knowledge associated with urban and environmental issues, and will explore more advanced courses regarding Environmental Sciences and Engineering (climate change, water and air treatment, environmental analysis and modeling), Urban Infrastructure Engineering (urban planning, construction materials, structural mechanics and design, health monitoring), and Disaster Management Engineering (fine dust, earthquake, typhoon). The Department of Urban and Environmental Engineering at UNIST is committed to developing innovative technologies in the related fields and cultivating future leaders who will make a huge impact on our profession and society.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 30 Credits
	Elective 선택[학과 지정]	13	1) "What you may (not) want to know about cities and environment" is included in the fundamental elective, but not included in the requirement for graduation 2) All the other fundamental elective courses will be accepted in CUEE	
Major 전공	Required 필수	15	Refer to Required course list below	At least 54 Credits
	Elective 선택	39	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		13	All courses acceptable	At least 13 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			13 Credits	–	–
1	MTH112	Calculus Ⅱ(3)	○		
2	PHY103	General Physics Ⅱ(3)	○		
3	CHM102	General Chemistry Ⅱ(3)	○		
4	PHY108	General Physics Lab Ⅱ(1)	○		
5	CHM106	General Chemistry Lab Ⅱ(1)	○		
6	MTH201	Differential Equations (3)	○		
7	MTH203	Applied Linear Algebra (3)	○		
8	MTH211	Statistics (3)	○		
9	MGT102	Entrepreneurship (3)	○		
10	IE101	Introduction to Data Science(3)	○		
11	ITP117	Introduction to AI Programming Ⅱ(3)	○		
12	ITP111	Probability & Random Process (3)	○		
13	ITP112	Discrete Mathematics (3)	○		
14	UNI102	Understanding Major (1) **What you may (not) want to know about cities and environment**	○		

●: Required ○: Elective ◑: Recommended, ( ): credits

3. Curriculum [지구환경도시건설공학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Urban and Environmental Engineering	15	39	**54**	12	24	**36**	6	12	**18**

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp.	Remarks	Seme ster
CUEE201	Introduction to Environmental Engineering 환경공학개론	○	○	○	3-3-0		1
CUEE202	Earth and Environmental Sciences 지구환경과학	○	○	○	3-3-0		1
CUEE203	Introduction to Civil Engineering 건설공학개론	○	○	○	3-3-0		1
CUEE204	Introduction to Urban Planning 도시계획개론	○	○	○	3-3-0		2
CUEE205	Introduction to Natural Hazards 자연재해개론	○	○	○	3-3-0		1
CUEE490	Graduate Thesis 졸업논문	○	–	–	0 credit		1,2

* Double major students can choose 4 subjects out of 5 required courses above, and minor for 2 subjects.

Department of Civil, Urban, Earth, and Environmental Engineering

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred -Lect. -Exp.	Remark	Seme ster
CUEE206	Science Humanities 과학인문학	○	○	○	3-3-0		2
CUEE211	Environmental Chemistry 환경화학	○	○	○	3-3-0		1
CUEE212	Water Pollution 수질오염	○	○	○	3-3-0		-
CUEE213	Environmental Colloids Science 환경콜로이드과학	○	○	○	3-3-0		-
CUEE221	Air Pollution 대기오염	○	○	○	3-3-0		2
CUEE222	Atmosphere and Ocean Sciences 대기해양과학	○	○	○	3-3-0		2
CUEE223	Atmospheric Physics 대기물리	○	○	○	3-3-0		1
CUEE224	Atmospheric Chemistry 대기화학	○	○	○	3-3-0		-
CUEE231	Mechanics of Materials 재료역학	○	○	○	3-3-0	[PRE] CUEE203	2
CUEE241	Geographic Information System 지리정보시스템	○	○	○	3-3-0		2
CUEE311	Water Treatment Engineering 수처리공학	○	○	○	3-3-0		-
CUEE312	Biomass and Bioenergy 바이오매스 및 바이오에너지	○	○	○	3-3-0		-
CUEE313	Aquatic Chemistry Laboratory 수질화학실험	○	○	○	3-1-4		-
CUEE314	Environmental Data Analysis and Practice 환경데이터분석	○	○	○	3-3-0		1
CUEE315	Waste Engineering and Resource Recovery 자원순환과 폐기물관리	○	○	○	3-3-0		
CUEE321	Analysis of Pollutants 오염물질분석 및 실험	○	○	○	3-1-4		-
CUEE322	Introduction to Remote Sensing 원격탐사개론	○	○	○	3-3-0		-
CUEE323	Atmospheric Dynamics 대기역학	○	○	○	3-3-0		-
CUEE324	Environmental Thermodynamics 환경열역학	○	○	○	3-3-0		1
CUEE331	Structural Analysis 구조역학	○	○	○	3-3-0	[PRE] CUEE231	1
CUEE332	Matrix Structural Analysis 매트릭스구조해석	○	○	○	3-3-0		-
CUEE333	Concrete Structures 콘크리트구조공학	○	○	○	3-3-0	[PRE] CUEE231	2
CUEE336	Soil Mechanics I 토질역학 I	○	○	○	3-3-0		1
CUEE337	Building Collapse and Safety Inspection Techniques 건물 붕괴와 안전진단 기술	○	○	○	3-3-0		1
CUEE341	Urban Transportation Planning 교통계획	○	○	○	3-3-0		1
CUEE342	Urban Development 도시개발	○	○	○	3-3-0		1
CUEE351	Probability Concepts in Engineering 공학확률	○	○	○	3-3-0		2

Course Code	Course Title	Major	Double	Minor	Cred -Lect. -Exp.	Remark	Seme ster
CUEE352	Disaster Management 재난관리	○	○	○	3-3-0		2
CUEE353	Numerical Modeling and Analysis 수치모델링및분석	○	○	○	3-3-0		2
CUEE354	Disaster Monitoring and Prediction using Artificial Intelligence AI를 활용한 재난재해 모니터링 및 예측	○	○	○	3-3-0		2
CUEE355	Introduction to Carbon Neutral Policy 탄소중립정책개론	○	○	○	3-3-0	[IDEN] CN201	-
CUEE411	Water and Wastewater Engineering 상하수도공학	○	○	○	3-3-0		2
CUEE412	Environmental Bioprocess 환경생물공정	○	○	○	3-3-0		-
CUEE413	Hydraulics 수리학	○	○	○	3-3-0		2
CUEE414	Water Treatment Modeling: Principles and Practice 수처리모델링	○	○	○	3-3-0		-
CUEE421	Earth Environment Numerical Analysis 지구환경전산실습	○	○	○	3-1-4		-
CUEE422	Climate Change Engineering 기후변화공학	○	○	○	3-3-0		2
CUEE423	GIS-Based Modeling GIS기반모델링	○	○	○	3-3-0		-
CUEE424	Statistics in Earth and Environmental Sciences 지구환경통계학	○	○	○	3-3-0		1
CUEE431	Steel Structures 강구조공학	○	○	○	3-3-0	[PRE] CUEE231	-
CUEE432	Introduction to Structural Dynamics 구조동역학개론 (구조진동론)	○	○	○	3-3-0		-
CUEE433	Construction Materials 콘크리트재료공학 I	○	○	○	3-3-0	[PRE] CUEE203	-
CUEE434	Soil MEchanics II 토질역학 II	○	○	○	3-3-0		-
CUEE441	Urban Design 도시설계	○	○	○	3-3-0		1
CUEE442	Urban Planning Studio 도시계획 종합설계	○	○	○	3-3-0		1
CUEE452	Satellite Remote Sensing 위성원격탐사	○	○	○	3-3-0		-
CUEE453	Properties of Concrete 콘크리트재료공학 II	○	○	○	3-3-0		-
CUEE491	Special Topics in Urban and Environmental Engineering I 도시환경공학특론 I	○	○	○	3-3-0		-
CUEE492	Special Topics in Urban and Environmental Engineering II 도시환경공학특론 II	○	○	○	3-3-0		-
CUEE493	Special Topics in Urban and Environmental Engineering III 도시환경공학특론 III	○	○	○	3-3-0		-
CUEE494	Special Topics in Urban and Environmental Engineering IV 도시환경공학특론 IV	○	○	○	3-3-0		-
CUEE495	Special Topics in Urban and Environmental Engineering V 도시환경공학특론 V	○	○	○	3-3-0		-

Department of Civil, Urban, Earth, and Environmental Engineering

Course Code	Course Title	Major	Double	Minor	Cred -Lect. -Exp.	Remark	Semester
UNI206	Predicting Earthquake Waves 지진파 예측하기	○	○	○	3-3-0		-
CHM211	Organic Chemistry I 유기화학 I	○	○	○	3-3-0	Refer to each department section	
CHM212	Organic Chemistry II 유기화학 II	○	○	○	3-3-0		
CHM231	Physical Chemistry I 물리화학 I	○	○	○	3-3-0		
CHM232	Physical Chemistry II 물리화학 II	○	○	○	3-3-0		
CHM391	Instrumental Analysis 기기분석	○	○	○	3-3-0		
IE303	Data Mining 데이터마이닝	○	○	○	3-3-0		
IE307	Statistical Computing 통계계산	○	○	○	3-3-0		
IE313	Time-series Analysis 시계열분석	○	○	○	3-3-0		
IE406	Applied Machine Learning 기계학습 응용	○	○	○	3-3-0		
IE422	Social Network Analysis 사회연결망분석	○	○	○	3-3-0		
MEN220	Thermodynamics 유체역학	○	○	○	3-3-0		
MEN301	Numerical Analysis 수치해석	○	○	○	3-2-2		
MGT211	Microeconomics 미시경제학	○	○	○	3-3-0		
MGT315	Econometrics 계량경제학	○	○	○	3-3-0		
UNI203	Design and implementation of data-driven machine learning 데이터기반 머신러닝 설계 및 제작	○	○	○	1-1-0		

※ [PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

2025	→	2026
NEW	→	CUEE355 Introduction to Carbon Neutral Policy 탄소중립정책개론
CUEE433 Construction Materials 건설재료공학		CUEE433 Construction Materials 콘크리트재료공학 I
CUEE453 콘크리트재료공학		CUEE453 Properties of Concrete 콘크리트재료공학 II

※ All of the course codes have changed to CUEE from UEE due to the department name change

5. Curriculum Map [교육과정 이수 체계도]

● Environmental Eng. ● Environmental Science ● Construction Eng. ● Urban Planning ● Disaster Management

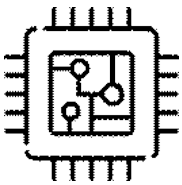
Course Code	Course Title	Recommendation by each detailed majors
CUEE206	Science Humanities 과학인문학	● ● ● ● ●
CUEE211	Environmental Chemistry 환경화학	● ● ○ ○ ○
CUEE212	Water Pollution 수질오염	● ○ ○ ○ ●
CUEE213	Environmental Colloids Science 환경콜로이드과학	● ○ ○ ○ ○
CUEE221	Air Pollution 대기오염	● ● ○ ○ ●
CUEE222	Atmosphere and Ocean Sciences 대기해양과학	○ ● ○ ○ ●
CUEE223	Atmospheric Physics 대기물리	○ ● ○ ○ ○
CUEE224	Atmospheric Chemistry 대기화학	○ ● ○ ○ ●
CUEE231	Mechanics of Materials 재료역학	○ ○ ● ○ ●
CUEE241	Geographic Information System 지리정보시스템	○ ● ● ● ●
CUEE311	Water Treatment Engineering 수처리공학	● ○ ○ ○ ○
CUEE312	Biomass and Bioenergy 바이오매스 및 바이오에너지	● ○ ○ ○ ○
CUEE313	Aquatic Chemistry Laboratory 수질화학실험	● ○ ○ ○ ○
CUEE314	Environmental Data Analysis and Practice 환경데이터분석	● ● ○ ○ ○
CUEE315	Waste Engineering and Resource Recovery 자원순환과 폐기물관리	● ○ ○ ○ ○
CUEE321	Analysis of Pollutants 오염물질분석 및 실험	● ● ○ ○ ○
CUEE322	Introduction to Remote Sensing 원격탐사개론	○ ● ● ● ●
CUEE323	Atmospheric Dynamics 대기역학	○ ● ○ ○ ○
CUEE324	Environmental Thermodynamics 환경열역학	● ● ○ ○ ○
CUEE331	Structural Analysis 구조역학	○ ○ ● ○ ●
CUEE332	Matrix Structural Analysis 매트릭스구조해석	○ ○ ● ○ ○
CUEE333	Concrete Structures 콘크리트구조공학	○ ○ ● ○ ○
CUEE334	Properties of Concrete 콘크리트재료공학	○ ○ ● ○ ○
CUEE336	Soil Mechanics 토질역학	○ ○ ● ○ ●
CUEE337	Building Collapse and Safety Inspection Techniques 건물 붕괴와 안전진단 기술	○ ○ ● ● ●
CUEE341	Urban Transportation Planning 교통계획	○ ○ ○ ● ○

Department of Civil, Urban, Earth, and Environmental Engineering

Course Code	Course Title	Recommendation by each detailed majors
CUEE342	Urban Development 도시개발	○ ○ ○ ● ○
CUEE351	Probability Concepts in Engineering 공학확률	● ● ● ● ●
CUEE352	Disaster Management 재난관리	○ ○ ○ ● ●
CUEE353	Numerical Modeling and Analysis 수치모델링및분석	● ● ● ○ ●
CUEE354	Disaster monitoring and prediction using artificial intelligence AI를 활용한 재난재해 모니터링 및 예측	● ● ○ ● ●
CUEE355	Introduction to Carbon Neutral Policy 탄소중립정책개론	● ● ● ● ●
CUEE411	Water and Wastewater Engineering 상하수도공학	● ○ ● ○ ○
CUEE412	Environmental Bioprocess 환경생물공정	● ○ ○ ○ ○
CUEE413	Hydraulics 수리학	● ○ ● ○ ○
CUEE414	Water Treatment Modeling: Principles and Practice 수처리모델링	● ○ ○ ○ ○
CUEE421	Earth Environment Numerical Analysis 지구환경전산실습	○ ● ○ ○ ○
CUEE422	Climate Change Engineering 기후변화공학	● ● ○ ○ ○
CUEE423	GIS-Based Modeling GIS기반모델링	○ ● ● ● ●
CUEE424	Statistics in Earth and Environmental Sciences 지구환경통계학	○ ● ○ ○ ○
CUEE431	Steel Structures 강구조공학	○ ○ ● ○ ○
CUEE432	Introduction to Structural Dynamics 구조동역학개론 (구조진동론)	○ ○ ● ○ ●
CUEE433	Construction Materials 콘크리트재료공학 I	○ ○ ● ○ ○
CUEE434	Foundation Engineering 기초공학	○ ○ ● ○ ●
CUEE441	Urban Design 도시설계	○ ○ ○ ● ●
CUEE442	Urban Planning Studio 도시계획 종합설계	○ ○ ○ ● ●
CUEE452	Satellite Remote Sensing 위성원격탐사	○ ● ○ ● ○
CUEE453	Properties of Concrete 콘크리트재료공학 II	○ ○ ● ○ ○
CUEE491	Special Topics in Urban and Environmental Engineering I 도시환경공학특론 I	● ● ● ● ●
CUEE492	Special Topics in Urban and Environmental Engineering II 도시환경공학특론 II	● ● ● ● ●
CUEE493	Special Topics in Urban and Environmental Engineering III 도시환경공학특론 III	● ● ● ● ●
CUEE494	Special Topics in Urban and Environmental Engineering IV 도시환경공학특론 IV	● ● ● ● ●
CUEE495	Special Topics in Urban and Environmental Engineering V 도시환경공학특론 V	● ● ● ● ●

Department of Semiconductor Engineering [반도체공학과]

■ Department Introduction [학과소개]



Semiconductors are a comprehensive and multidisciplinary academic and technical field encompassing materials, processes, devices, equipment, circuits, and system design. Semiconductors are an important industry that forms the foundation of all industries, and a field in which technological development is progressing very rapidly. Therefore, it is important to foster excellent talents and secure cutting-edge technological competitiveness. The Department of Semiconductor Engineering operates UNIST's first contract department to foster global semiconductor core talents through collaboration between UNIST, which has the best faculty and research infrastructure, and Samsung Electronics, which has world-class capabilities. The curriculum is operated as a bachelor's and master's degree program that links undergraduate and graduate courses (3.5 years for bachelor's degree + 1.5 years for master's degree). Successful completion of all courses guarantees employment in a process position at Samsung Electronics.

1. Graduation Requirement [졸업 이수요건, 학사과정]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 32 Credits
	Elective 선택[학과 지정]	15	Take 15 credits among the basic course list: Calculus Ⅱ(3), Differential Equations(3), Applied Linear Algebra(3), Statistics(3), General Physics Ⅱ(3), General Physics Lab Ⅱ(1), General Chemistry Ⅱ(3), General Chemitry Lab Ⅱ(1), Introduction to AI Programming Ⅱ(3), Probability and Random Processes(3), Discrete Mathematics(3), Entrepreneurship(3), Introduction to Data Science(3)	
Major 전공	Required 필수	27	Refer to Required course list below	At least 51 Credits
	Elective 선택	24	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Research Internship)	3 Credits
Free Elective 자유선택		14	All courses accepted	At least 14 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			15 Credits	–	–
1	MTH112	Calculus Ⅱ(3)	○	해당없음	해당없음
2	MTH201	Differential Equations (3)	○		
3	MTH203	Applied Linear Algebra (3)	○		
4	MTH211	Statistics (3)	○		
5	PHY103	General Physics Ⅱ(3)	○		
6	PHY108	General Physics Lab Ⅱ(1)	○		
7	CHM102	General Chemistry Ⅱ(3)	○		
8	CHM106	General Chemistry Lab Ⅱ(1)	○		
9	ITP117	Introduction to AI Programming Ⅱ(3)	○		
10	ITP111	Probability & Random Process (3)	○		
11	ITP112	Discrete Mathematics (3)	○		
12	MGT102	Entrepreneurship (3)	○		
13	IE101	Introduction to Data Science(3)	○		

●: Required ○: Elective ◑: Recommended, ( ): credits

* Basic requirements change applies to all students regardless of entrance year.

3. Curriculum [반도체공학과 교육과정 학부]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Computer Science and Engineering	27	24	51	해당 없음			해당 없음		

*R: Required, E: Elective

▶ Required [학부 전공필수]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp.	Remarks	Seme ster
SSE100	Leadership for Semiconductor Engineer 반도체 리더십	○	–	–	1-1-0		2
SSE200	History of Semiconductor Engineering 반도체 역사	○	–	–	1-1-0		1
SSE201	Introduction to Semiconductors 반도체개론	○	–	–	3-3-0		1
SSE205	Semiconductors Materials 반도체 소재	○	–	–	3-3-0		2
SSE209	Semiconductor Career Design 반도체 커리어 디자인	○	–	–	1-1-0		1
SSE221	Semiconductor Basic Experiment I 반도체 기초실험 I	○	–	–	3-1-4		2
SSE312	Semiconductor Processing 반도체 집적공정	○	–	–	3-3-0		2
SSE321	Semiconductor Basic Experiment II 반도체 기초실험 II	○	–	–	3-1-4		1

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp.	Remarks	Semester
SSE331	Semiconductor Materials and Devices 반도체 재료 및 소자	○	-	-	3-3-0		1
SSE371	Basic Research on Semiconductor 반도체 기초 연구	○	-	-	3-0-6		2
SSE451	Process Integration Simulation 집적공정 시뮬레이션	○	-	-	3-2-2		1
SSE490	Industry Seminar on Semiconductor 반도체 산업 세미나	○	-	-	1-1-0		1

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp.	Remark	Semester
SSE202	Introduction to Materials Science and Engineering 재료공학개론	○	-	-	3-3-0	[IDEN] MSE202	1
SSE203	Modern Physics of Materials 재료현대물리	○	-	-	3-3-0	[IDEN] MSE203	1
SSE204	Electromagnetics 전자기학	○	-	-	3-3-0	[IDEN] MSE204	1
SSE241	System Programming 시스템 프로그래밍	○	-	-	3-3-0		2
SSE242	Computer Architecture 컴퓨터구조	○	-	-	3-3-0		2
SSE251	Introduction to Computational Materials Science 전산재료과학개론	○	-	-	3-3-0	[IDEN] MSE290	2
SSE252	Computer Aided Engineering for Semiconductor 컴퓨터이용공학:반도체	○	-	-	3-3-0		2
SSE261	Basic Circuit Theory 기초 회로 이론	○	-	-	3-3-0		1
SSE301	Solid State Physics of Materials 재료고체물리	○	-	-	3-3-0	[IDEN] MSE350	2
SSE311	Introduction to Plasma Physics 플라즈마 물리입문	○	-	-	3-3-0		1
SSE313	Plasma Engineering 플라즈마 공학	○	-	-	3-3-0		2
SSE332	Nano Semiconductor Devices 나노 반도체 소자	○	-	-	3-3-0		1
SSE333	Semiconductor Physics 반도체 물리학	○	-	-	3-3-0	[IDEN] PHY407	1
SSE341	Machine Learning 기계학습	○	-	-	3-3-0	[IDEN] MSE487	1
SSE351	Devices Simulation 소자 시뮬레이션	○	-	-	3-2-2		2
SSE354	Nano-Materials Reliability 나노소재신뢰성	○	-	-	3-3-0	[IDEN] MSE454	2
SSE365	Molecular Modeling and Simulation 분자모델링 및 시뮬레이션	○	-	-	3-3-0	[IDEN] MSE365	1
SSE411	Thin Film Technology 박막공학	○	-	-	3-3-0		1

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp.	Remark	Seme ster
SSE421	Analytical Instrument for Semiconductor Materials 반도체소재 분석기기학	○	-	-	3-2-2		1
SSE431	Memory and Neuromorphic Device 메모리와뉴로모픽소자	○	-	-	3-3-0		1
SSE491	Special Topics in Semiconductor Engineering I 반도체 공학특론 I	○	○	○	3-3-0		-
SSE492	Special Topics in Semiconductor Engineering II 반도체 공학특론 II	○	○	○	3-3-0		-
SSE493	Special Topics in Semiconductor Engineering III 반도체 공학특론III	○	○	○	3-3-0		-
SSE494	Special Topics in Semiconductor Engineering III 반도체 공학특론III	○	○	○	3-3-0		-
SSE495	Special Topics in Semiconductor Engineering III 반도체 공학특론III	○	○	○	3-3-0		-

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

2025	→	2026
NEW		SSE209 Semiconductor Career Design 반도체 커리어 디자인
		SSE365 Molecular Modeling and Simulation 분자모델링 및 시뮬레이션
		SSE354 Nano-Materials Reliability 나노소재신뢰성
		SSE 491 Special Topics in Semiconductor Engineering I 반도체 공학 특론 I
		SSE 492 Special Topics in Semiconductor Engineering II 반도체 공학 특론 II
		SSE 493 Special Topics in Semiconductor Engineering III 반도체 공학 특론 III
		SSE 494 Special Topics in Semiconductor Engineering IV 반도체 공학 특론 IV
		SSE 495 Special Topics in Semiconductor Engineering V 반도체 공학 특론 V

5. Curriculum [반도체공학과 교육과정 대학원]

▶ Graduation Requirement [졸업 이수요건]

Major	Program	Course Credit	Research Credit	Total Credits
Department of Semiconductor Engineering	Masters Program	At least 18 credits	At least 10 credits	At least 28 credits

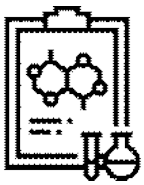
Category	Course code	Classification	Course Title	Course Title (Kor.)	Cred. -Lect. -Exp.
Required	SSE590	Research	Seminar	세미나	1-1-0
	SSE591		Seminar on Semiconductor Technology Trends	반도체 기술동향 세미나	1-1-0
	SSE690		Master's Research	석사논문연구	1~3
	SSE520	Lecture	Advanced Semiconductor Process: Bridging Theory and Practice	반도체 실무 공정	3-3-0
	SSE521		Semiconductor Processing and Device Lab	반도체 소자 실험/실습	3-0-6
	SSE571		Industry-Academic Project for Semiconductor I	반도체 산학프로젝트 I	3-0-6
	SSE572		Industry-Academic Project for Semiconductor II	반도체 산학프로젝트 II	3-0-6
	SSE573		Industry-Academic Project for Semiconductor III	반도체 산학프로젝트III	3-0-6
Elective	SSE511	Lecture	Plasma Diagnostics	플라즈마 진단	3-3-0
	SSE512		Advanced Plasma Physics	고급 플라즈마 물리	3-3-0
	SSE513		Special Topics on Lithography	리소그래피특론	3-3-0
	SSE514		Semiconductors Interconnect Technology	반도체 배선기술	3-3-0
	SSE531		Interface Physics of Electronic Devices	전자소자계면물리	3-3-0
	SSE532		Advanced Semiconductor Device Engineering	고급 반도체소자 공학	3-3-0
	SSE561		Advanced Analog IC Design	고급 아날로그 집적회로	3-3-0
	SSE681		Special Topics on Semiconductor Materials and Devices Engineering I	반도체공학특론 I	3-3-0
	SSE682		Special Topics on Semiconductor Materials and Devices Engineering II	반도체공학특론II	3-3-0
	SSE683		Special Topics on Semiconductor Materials and Devices Engineering III	반도체공학특론III	3-3-0
	SSE684		Special Topics on Advanced Semiconductor Materials and Devices Engineering I	반도체공학 고급특론 I	3-3-0
	SSE685		Special Topics on Advanced Semiconductor Materials and Devices Engineering II	반도체공학 고급특론II	3-3-0
	SSE686		Special Topics on Advanced Semiconductor Materials and Devices Engineering III	반도체공학 고급특론III	3-3-0

6. Curriculum Map [교육과정 이수 체계도]

2nd semester, Freshmen	1st semester, Sophomore	2nd semester, Sophomore	1st semester, Junior	2nd semester, Junior	1st semester, Senior
[SSE100] Leadership for Semiconductor Engineer 반도체 리더십	**[SSE200] History of Semiconductor Engineering 반도체 역사**	**[SSE205] Introduction to Computational Materials Science 반도체 소재**	**[SSE321] Semiconductor Basic Experiment II 반도체 기초실험 II**	**[SSE331] Semiconductor Materials and Devices 반도체 재료 및 소자**	**[SSE451] Process Integration Simulation 집적공정 시뮬레이션**
	[SSE201] Introduction to Semiconductors 반도체개론	**[SSE209] Semiconductor Career Design 반도체 커리어 디자인**	**[SSE312] Semiconductor Processing 반도체집적공정**	**[SSE371] Basic Research on Semiconductor 반도체 기초 연구**	**[SSE490] Industry Seminar on Semiconductor 반도체 산업 세미나**
	[SSE202] Introduction to Materials Science and Engineering 재료공학개론	**[SSE221] Semiconductor Basic Experiment I 반도체 기초실험 I**	[SSE311] Introduction to Plasma Physics 플라즈마 물리입문	[SSE301] Introduction to Metallic Materials 재료고체물리	[SSE411] Thin Film Technology 박막공학
	[SSE203] Modern Physics of Materials 재료현대물리	[SSE251] Introduction to Computational Materials Science 전산재료과학개론	[SSE332] Nano Semiconductor Devices 나노반도체소자	[SSE313] Plasma Engineering 플라즈마 공학	[SSE421] Analytical Instrument for Semiconductor Materials 반도체 소재 분석 기기학
	[SSE204] Electromagnetics 전자기학	[SSE252] Computer Aided Engineering for Semiconductor 컴퓨터이용공학: 반도체	[SSE333] Semiconductor Physics 반도체물리학	[SSE351] Devices Simulation 소자 시뮬레이션	[SSE431] Memory and Neuromorphic Device 메모리와 뉴로모픽 소자
		[SSE261] Basic Circuit Theory 기초 회로 이론	[SSE341] Machine Learning 기계학습	[SSE354] Nano-Materials Reliability 나노소재신뢰성	
			[SSE365] Molecular Modeling and Simulation 분자모델링 및 시뮬레이션		

Department of Materials Science and Engineering [신소재공학과]

■ Department Introduction [학과소개]



The Department of Materials Science & Engineering is an interdisciplinary field which emphasizes the study on the interrelationship among processing, structure, and properties in materials. One who is in this discipline will be able to identify the key issues and strategies for any given challenges in materials development, based on deep understanding of the interrelationship. To this end, the Department of Materials Science & Engineering offers a range of subjects from fundamentals such as Thermodynamics in Materials and Crystallography to up-to-dated advanced courses covering specific topics such as next generation semiconductors, energy conversion materials, and flexible materials.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 32 Credits
	Elective 선택[학과 지정]	15	Recommended: General Physics Ⅱ(3), General Chemistry Ⅱ(3), Differential Equations(3), Applied Linear Algebra(3), Introduction to AI Programming Ⅱ(3)	
Major 전공	Required 필수	21	Refer to Required course list below	At least 51 Credits
	Elective 선택	30	Refer to Elective course list below	
	Internship 인턴십	3	Department graduation requirement: Complete at least 3 credits of research internship or Coop internship and submit internship report	3 Credits
Free Elective 자유선택		14	All courses acceptable	At least 14 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			15 credits	–	–
1	MTH112	Calculus Ⅱ(3)	○		
2	PHY103	General Physics Ⅱ(3)	◑		
3	CHM102	General Chemistry Ⅱ(3)	◑		
4	PHY108	General Physics Lab Ⅱ(1)	○		
5	CHM106	General Chemistry Lab Ⅱ(1)	○		
6	MTH201	Differential Equations (3)	◑		
7	MTH203	Applied Linear Algebra (3)	◑		
8	MTH211	Statistics (3)	○		
9	MGT102	Entrepreneurship (3)	○		
10	IE101	Introduction to Data Science(3)	○		
11	ITP117	Introduction to AI Programming Ⅱ(3)	◑		
12	ITP111	Probability & Random Process (3)	○		
13	ITP112	Discrete Mathematics (3)	○		
14	UNI103	Understanding Major (1) **Trend in Materials Science and Engineering**	○		

●: Required ○: Elective ◑: Recommended, ( ): credits
*It is recommended to take the above recommended courses for Double major/Minor students.

3. Curriculum [신소재공학과 교육과정] ※Course opening semester is subject to change.

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Materials Science and Engineering	21	30	**51**	21	18	**39**	12	6	**18**

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp.	Remarks	Seme ster
MSE202	Introduction to Materials Science and Engineering 재료공학개론	○	○	○	3-3-0	[IDEN] SSE202	1
MSE203	Physical Chemistry I: Thermodynamics 재료물리화학I: 열역학	○	○	○	3-3-0	[IDEN] SSE203	2
MSE230	Introduction to Crystallography 결정학개론	○	○	○	3-3-0		1
MSE290	Introduction to Computational Materials Science 전산재료과학개론	○	○		3-3-0	[IDEN] SSE251	2
MSE300	Materials Lab 재료실험	○	○		3-1-4		2
MSE312	Phase Transformations in Materials 재료상변태	○	○	○	3-3-0		1
MSE354	Introduction to Semiconductors 반도체개론	○	○		3-3-0		1

*Courses that are not required for Minor can be counted as Elective course

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remarks	Semester
MSE204	Electromagnetics 전자기학	○	○	○	3-3-0	[IDEN] EEE204 NE250 PHY203 SSE204	1
MSE211	Physical Chemistry of Materials II: Reaction Engineering 재료물리화학II: 반응공학	○	○	○	3-3-0		2
MSE250	Modern Physics of Materials: Quantum Mechanics 재료현대물리: 양자역학	○	○	○	3-3-0		1
MSE253	Introduction to Nanomaterials 나노재료개론	○	○	○	3-3-0		2
MSE270	Introduction to Polymer Materials 고분자재료개론	○	○	○	3-3-0	[IDEN] CHM372 ECHE351	2
MSE304	Data Analytics for Materials Science and Engineering 재료공학 데이터 분석	○	○	○	3-3-0		2
MSE310	Electrochemistry 전기화학	○	○	○	3-3-0		
MSE311	Introduction to Metallic Materials 금속재료개론	○	○	○	3-3-0		2
MSE313	Mechanical Behavior of Materials 재료의기계적거동	○	○	○	3-3-0		2
MSE315	Microstructure-Property Relationships I 미세구조와 물성 I	○	○	○	3-3-0		1
MSE316	Wearable smart healthcare electronic system 웨어러블 스마트 헬스케어 전자소자 시스템	○	○	○	3-2-2		2
MSE317	Surface Science of Materials 재료표면과학	○	○	○	3-3-0	[PRE] MSE202	1
MSE318	Polymer Stuructures and Properties 고분자 구조 및 물성	○	○	○	3-3-0		2
MSE350	Solid State Physics of Materials 재료고체물리	○	○	○	3-3-0	[IDEN] SSE301	2
MSE355	Nano-energy Materials 나노에너지재료	○	○	○	3-3-0		1
MSE356	Nanophotonics 나노포토닉스	○	○	○	3-3-0		1
MSE360	Bio-inspired Materials Science 바이오소재과학	○	○	○	3-3-0	[IDEN] BME235	2
MSE365	Molecular Modeling and Simulation for MSE 분자모델링 및 시뮬레이션	○	○	○	3-3-0	[IDEN] SSE365	
MSE372	Polymer Physics 고분자 물리	○	○	○	3-3-0		1
MSE401	Transmission Electron Microscopy 전자현미경학	○	○	○	3-3-0		1
MSE402	Analytical Instrument for Semiconductor Materials 반도체소재분석기기학	○	○	○	3-3-0		1
MSE403	Thin Film Technology 박막공학	○	○	○	3-3-0	[IDEN] SSE411	1
MSE405	Introduction to Crystal Growth 결정성장개론	○	○	○	3-3-0		1
MSE406	Materials for Photoelectrochemical Devices 광전기화학 소재 및 소자	○	○	○	3-3-0		1
MSE407	Semiconductor Device Characteristics and AI Hardware Application 반도체소자 특성과 AI 하드웨어 응용	○	○	○	3-3-0		2

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remarks	Seme ster
MSE431	Introduction to Spintronics 스핀트로닉스개론	○	○	○	3-3-0		2
MSE435	Microstructure-Property Relationships II 미세구조와 물성 II	○	○	○	3-3-0		2
MSE452	Nano Semiconductor Devices 나노반도체소자	○	○	○	3-3-0		1
MSE453	Semiconductor Processing 반도체집적공정	○	○	○	3-3-0		2
MSE454	Nano-Materials Reliability 나노소재신뢰성	○	○	○	3-3-0	[IDEN] SSE354	1
MSE455	Display Engineering 디스플레이 공학	○	○	○	3-3-0		
MSE456	Semiconductor Materials and Devices 반도체재료및소자	○	○	○	3-3-0		2
MSE471	Polymer Composites 고분자복합재료	○	○	○	3-3-0		1
MSE472	Atomic layer materials processing 원자층제어박막공정(ALD)	○	○	○	3-3-0		1,2
MSE473	Ultra-fine patterning process 초미세패터닝공정	○	○	○	3-3-0		1,2
MSE474	Low-dimensional semiconductor materials 저차원 반도체 소재	○	○	○	3-3-0		1,2
MSE475	Emerging AI Semiconductor Materials and Devices 차세대 인공지능 반도체 소자	○	○	○	3-3-0		1,2
MSE476	Process integration lab 집적회로공정실험	○	○	○	3-3-0		1,2
MSE477	Industry-University Joint research 산학연구 프로젝트	○	○	○	3-3-0		1,2
MSE478	Special Topics on Lithography 리소그래피 특론	○	○	○	3-3-0		2
MSE479	Materials for Organic Electronics 유기전자재료	○	○	○	3-3-0		1,2
MSE480	Amorphous Oxide Semiconductor Materials 산화물반도체소재	○	○	○	3-3-0		
MSE481	Semiconductor Device Fabrication 반도체소자제작실습	○	○	○	3-0-6		
MSE482	Research Project 연구프로젝트	○	○	○	3-0-6		
MSE483	Introduction to Plasma Processes in Semiconductor Manufacturing 플라즈마공정입문	○	○	○	3-3-0		
MSE484	Advanced Semiconductor Process and Computational Science 반도체공정과계산과학	○	○	○	3-3-0		
MSE485	Advanced Semiconductor Device Engineering 고급반도체소자공학	○	○	○	3-3-0		
MSE486	Experiment in Semiconductor Device Analysis 반도체소자분석	○	○	○	3-1-4		
MSE487	AI and Machine Learning for Semiconductor Materials and Devices Engineer 반도체소자공학을 위한 AI이해	○	○	○	3-3-0	[IDEN] SSE341	
MSE488	Next Gerenation Semiconductor Memory Devices 차세대 메모리 소자	○	○	○	3-3-0		
MSE489	Advanced semiconductor packaging 첨단패키징기술	○	○	○	3-3-0		

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remarks	Semester
MSE491	Special Topics in Materials Science and Engineering I 신소재공학특론I	○	○	○	3-3-0		-
MSE492	Special Topics in Materials Science and Engineering II 신소재공학특론II	○	○	○	3-3-0		-
MSE493	Special Topics in Materials Science and Engineering III 신소재공학특론III	○	○	○	3-3-0		-
MSE494	Special Topics in Materials Science and Engineering IV 신소재공학특론IV	○	○	○	3-3-0		-
BIO211	Biochemistry I 생화학 I	○	○	○	3-3-0	Refer to each department section	
BME312	Engineering Physiology 공학생리학	○	○	○	3-3-0		
BME437	AI-based Affective Engineering AI 기반 감성공학	○	○	○	3-3-0		
CHM211	Organic Chemistry I 유기화학 I	○	○	○	3-3-0		
CHM291	Analytical Chemistry I 분석화학 I	○	○	○	3-3-0		
CHM321	Biochemistry I 생화학 I	○	○	○	3-3-0		
CHM351	Inorganic Chemistry I 무기화학 I	○	○	○	3-3-0		
CHM353	AI-Based Digital Chemistry AI기반 디지털 화학	○	○	○	3-3-0		
EEE442	Semiconductor VLSI Devices Engineering 반도체집적소자공학	○	○	○	3-3-0		
IE308	Service Intelligence 서비스 지능	○	○	○	3-3-0		
MEN230	Solid Mechanics I 고체역학 I	○	○	○	3-3-0		
MEN301	Numerical Analysis 수치해석	○	○	○	3-2-2		
MEN431	Introduction to Plastic Deformation 소성학개론	○	○	○	3-3-0		
MEN456	Artificial Intelligence Based Digital Manufacturing AI 기반 디지털 제조 공학	○	○	○	3-3-0		
MEN472	Creating Autonomous Car 자율주행 자동차 만들기	○	○	○	3-3-0		
MTH434	Mathematical Analysis and Computation for Machine Learning 머신러닝 해석학 원리와 계산	○	○	○	3-3-0		
MTH450	Deep Learning Methods for Solving Partial Differential Equations 편미분방정식 계산을 위한 딥러닝 방법	○	○	○	3-3-0		
NE370	Nuclear Power Plant Accident Diagnosis using AI techniques AI를 이용한 원전 사고 진단	○	○	○	3-3-0		
PHY201	Classical Mechanics I 고전역학 I	○	○	○	3-3-0		
PHY231	Green Hydrogen Production System Based on Plasmonic Photoexcitation 빛을 이용한 청정수소 생산 시스템 설계	○	○	○	3-3-0		
PHY301	Quantum Physics I 양자물리학 I	○	○	○	3-3-0		
PHY303	Thermal and Statistical Physics I 열 및 통계물리학 I	○	○	○	3-3-0		
PHY407	Semiconductor Physics 반도체물리학	○	○	○	3-3-0		

Course Code	Course Title	Major	Double	Minor	Cred −Lect −Exp	Remarks	Seme ster
PHY451	Network Science and Machine Intelligence 네트워크과학과 기계지능	○	○	○	3−3−0	Refer to each department section	
PHY461	Challenge to Advanced Topics in Plasma Physics 현대 플라즈마 물리 난제 도전	○	○	○	3−3−0		
CUEE337	Building Collapse and Safety Inspection Techniques 건물 붕괴와 안전진단 기술	○	○	○	3−3−0		
UNI201	Photodynamic Therapy 광역동 치료	○	○	○	1−1−0		
UNI202	Blockchain and Cryptocurrencies 블록체인과 암호화폐	○	○	○	1−1−0		
UNI203	Design and Implementation of data−driven machine learning 데이터기반 머신러닝 설계 및 제작	○	○	○	1−1−0		
UNI204	Software Hacking and Defense 소프트웨어 해킹과 방어	○	○	○	1−1−0		
UNI205	Dynamic Programming and its Applications 동적계획법과 사회기업문제	○	○	○	1−1−0		
UNI206	Predicting Earthquake Waves 지진파 예측하기	○	○	○	1−1−0		
UNI207	Creative Computing for Media Art 창의적 컴퓨팅과 미디어아트	○	○	○	1−1−0		
UNI208	Inventory Management Optimization Strategies 재고관리 최적화 전략	○	○	○	1−1−0		

※ [PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

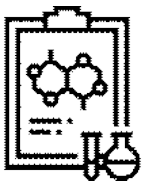
2025	→	2026
MSE351 Thin Film Technology(박막공학)	→	MSE403 Thin Film Technology(박막공학) 과목코드 변경 및 동일과목 지정, [IDEN] SSE411
MSE365 Molecular Modeling and Simulation for MSE (분자모델링 및 시뮬레이션)	→	MSE365 Molecular Modeling and Simulation for MSE (분자모델링 및 시뮬레이션) 동일과목 지정, [IDEN] SSE365
MSE454 Nano-Materials Reliability(나노소재신뢰성)	→	MSE454 Nano-Materials Reliability(나노소재신뢰성) 동일과목 지정, [IDEN] SSE354
<NEW>	→	MSE402 Analytical Instrument for Semiconductor Materials (반도체소재분석기기학)
	→	MSE472 Atomic layer materials processing(원자층제어박막공정(ALD))
	→	MSE473 Ultra-fine patterning process(초미세패터닝공정)
	→	MSE474 Low-dimensional semiconductor materials(저차원 반도체 소재)
	→	MSE475 Emerging AI Semiconductor Materials and Devices (차세대 인공지능 반도체 소자)
	→	MSE476 Process integration lab(집적회로공정실험)
	→	MSE477 Industry-University Joint research (산학연구 프로젝트)
	→	MSE478 Special Topics on Lithography(리소그라피 특론)
	→	MSE479 Materials for Organic Electronics(유기전자재료)

5. Curriculum Map [교육과정 이수 체계도]

1st semester, Sophomore	2nd semester, Sophomore	1st semester, Junior	2nd semester, Junior	1st semester, Senior	2nd semester, Senior
[MSE202] Introduction to Materials Science and Engineering 재료공학개론	**[MSE290] Introduction to Computational Materials Science 전산재료과학개론**	**[MSE312] Phase Transformations in Materials 재료상변태**	**[MSE300] Materials Lab 재료실험**	[MSE471] Polymer Composites 고분자복합재료	[MSE431] Introduction to Spintronics 스핀트로닉스개론
[MSE230] Introduction to Crystallography 결정학개론	**[MSE203] Physical Chemistry I: Thermodynamics 재료물리화학I:열역학**	**[MSE354] Introduction to Semiconductors 반도체개론**	[MSE350] Solid State Physics of Materials 재료고체물리	[MSE401] Transmission Electron Microscopy 전자현미경학	[MSE453] Semiconductor Processing 반도체집적공정
[MSE270] Introduction to Polymer Materials 고분자재료개론	[MSE253] Introduction to Nanomaterials 나노재료개론	[MSE355] Nano-energy Materials 나노에너지재료	[MSE311] Introduction to Metallic Materials 금속재료개론	[MSE454] Nano-Materials Reliability 나노소재신뢰성	[MSE435] Microstructure -Property RelationshipsII 미세구조와물성II
	[MSE211] Physical Chemistry of Materials II: Reaction Engineering 재료물리화학II:반응공학	[MSE403] Thin Film Technology 박막공학	[MSE313] Mechanical Behavior of Materials 재료의기계적거동	[MSE452] Nano Semiconductor Devices 나노반도체소자	[MSE407] Semiconductor Device Characteristics and AI Hardware Application 반도체소자 특성과 AI 하드웨어 응용
	[MSE204] Electromagnetics 전자기학	[MSE356] Nanophotonics 나노포토닉스	[MSE316] Wearable smart healthcare electronic system 웨어러블 스마트 헬스케어 전자소자 시스템	[MSE405] Introduction to Crystal Growth 결정성장개론	
	[MSE250] Modern Physics of Materials: Quantum Mechanics 재료현대물리:양자역학	[MSE372] Polymer Physics 고분자물리	[MSE304] Data Analytics for Materials Science and Engineering 재료공학데이터분석	[MSE456] Semiconductor Materials and Devices 반도체재료 및 소자	
		[MSE317] Surface Science of Materials 재료표면과학	[MSE318] Polymer Structures and Properties 고분자 구조 및 물성	[MSE406] Materials for Photoelectrochemical Devices 광전기화학 소재 및 소자	
		[MSE360] Bio-inspired Materials Science 바이오소재과학	[MSE315] Microstructure -Property Relationships I 미세구조와물성 I		

Interdisciplinary Major in Semiconductor Specialization [반도체특성화융합전공]

■ Introduction[전공 소개]



The Interdisciplinary Major in Semiconductor Specialization is designed to provide the multidisciplinary knowledge about four important fields including semiconductor materials, devices, processes, and packaging. The major also emphasizes hands-on experiments and the researches on semiconductor processing and devices by the students, and industry-academic cooperation which the students can actively join. To this end, the interdisciplinary major offers a range subjects from Department of Materials Science and Engineering, Mechanical Engineering, Energy and Chemical Engineering, Physics, Chemistry and Electrical Engineering.

1. Requirement [이수요건]

Category 구분	Credits 이수학점	Remarks 비고
Required **필수**	At least 18 Credits	1. Lecture Materials/Devices/Processes/Packaging each 3 credits or more 2. Major experiment 3 credits or more 3. Industry Program 3 credits or more 1. 전공이론 소재/소자/공정/패키징 교과 각 3학점 이상 2. 전공실습 3학점 이상 3. 산학프로그램 3학점 이상

2. Curriculum [교육과정]

Category 구분	Course Code 교과목코드	Course Title 교과목명	Cred. -Lect. -Exp.	Remarks	Semester
Process **공정**	MSE472	Atomic layer materials processing 원자층제어박막공정(ALD)	3-3-0		-
	MSE473	Ultra-fine patterning process 초미세패터닝공정	3-3-0		-
	MSE478(ENE614/SE633/SSE513)	Special Topics on Lithography 리소그라피 특론	3-3-0		-
	PHY427(SE527)	Introduction to Plasma Physics 플라즈마 물리 입문	3-3-0		-
	MSE453/(SE521)	Semiconductor Processing 반도체 집적공정	3-3-0		-
	MSE403 (SSE411//SE634)	Thin Film Technology 박막공학	3-3-0	[IDEN] SSE411	-
	MSE484(SE581)	Advanced semiconductor process and computational science 반도체 공정과 계산과학	3-3-0		-
	MSE483(SE610)	Introduction to plasma processes in semiconductor manufacturing 플라즈마 공정 입문	3-3-0		-

Category 구분	Course Code 교과목코드	Course Title 교과목명	Cred. -Lect. -Exp.	Remarks	Semester
	MEN441	Introduction to Optical Engineering 광공학개론	3-3-0		-
Device 소자	MSE488	Next Gerenation Semiconductor Memory Devices 차세대 메모리 소자	3-3-0		-
	MSE475	Emerging AI Semiconductor Materials and Devices 차세대 인공지능 반도체 소자	3-3-0		-
	MSE485(SE578/ SSE532/EE578)	Advanced Semiconductor Device Engineering 고급 반도체 소자 공학	3-3-0		-
	MSE452(SE632)	Nano Semiconducting Devices 나노반도체소자	3-3-0		-
	MSE407(SE630)	Semiconductor Device Characteristics and AI Hardware Application (SE630 Memory and Neuromophic Device) 반도체소자특성과AI하드웨어응용 (SE630메모리와뉴로모픽소자)	3-3-0		1
	MSE486(SE620)	Experiment in Semiconductor Device Analysis 반도체소자분석	3-3-0		-
	MSE487 (SE676/SSE341)	AI and machine learning for semiconductor materials and devices engineering 반도체 소자공학을 위한 AI 이해	3-3-0	[IDEN] /SSE341 /SE676	-
Material 소재	MSE479(CHM534)	Materials for Organic Electronics 유기전자재료	3-3-0		-
	MSE365	분자모델링 및 시뮬레이션 Molecular Modeling and Simulation for MSE	3-3-0		-
	MSE474	Low-dimensional semiconductor materials 저차원 반도체 소재	3-3-0		2
	MSE480(SE650)	Oxide Semiconductor and Related Devices 산화물 반도체 소재	3-3-0		1
	CHM351	Inorganic Chemistry I 무기화학1	3-3-0		1
	MSE350	Solid State Physics of Materials 재료고체물리	3-3-0		2
	PHY407(SSE333)	Semiconductor Physics 반도체 물리학	3-3-0		2
	CHM433	Semiconductor Chmistry 반도체 화학	3-3-0		2
	MSE402 (SSE421/SE522)	Analytical Instrument for Semiconductor Materials 반도체소재분석기기학	3-3-0		1
	MSE456(SE520)	Semiconductor Materials Properies (MSE456 Semiconductor Materials and Devices) 반도체재료물성 (MSE456반도체재료및소자)	3-3-0		2
Packaging 패키징	MSE489	Advanced semiconductor packaging 첨단패키징기술	3-3-0		1
	MEN310	Heat Transfer 열전달	3-3-0		1
	MEN353	Manufacturing System Design & Simulation 생산시스템 설계 및 시뮬레이션	3-3-0		2
	MSE454	Nanomaterials Reliability 나노소재 신뢰성	3-3-0		1
Major Experiment	MSE476	Process integration lab 집적회로공정실험	3-0-6		-

Category 구분	Course Code 교과목코드	Course Title 교과목명	Cred. -Lect. -Exp.	Remarks	Semester
전공실습	MSE481	Semiconductor device fabrication lab 반도체 소자 제작 실습	3-0-6		-
Industry Program 산학프로그램	MSE482	Research project 연구 프로젝트	3-0-6		-
	MSE477	Industry-University Joint research 산학연구 프로젝트	3-0-6		-

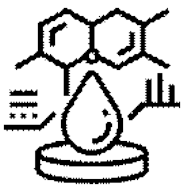
* Course offering may vary between semesters.

3. Curriculum Change [교육과정 변경사항]

2025	→	2026
MSE351 Thin Film Technology(박막공학)		MSE403 Thin Film Technology(박막공학) 과목코드 변경 및 동일과목 지정, [IDEN] SSE411
MSE365 Molecular Modeling and Simulation for MSE (분자모델링 및 시뮬레이션)		MSE365 Molecular Modeling and Simulation for MSE (분자모델링 및 시뮬레이션) 동일과목 지정, [IDEN] SSE365
MSE454 Nano-Materials Reliability(나노소재신뢰성)		MSE454 Nano-Materials Reliability(나노소재신뢰성) 동일과목 지정, [IDEN] SSE354
MSE487 AI and machine learning for semiconductor materials and devices engineer (반도체 소자공학을 위한 AI 이해)		MSE487 AI and machine learning for semiconductor materials and devices engineer (반도체 소자공학을 위한 AI 이해) 동일과목 지정, [IDEN] SSE341
<NEW>	→	MSE402 Analytical Instrument for Semiconductor Materials (반도체소재분석기기학)
		MSE472 Atomic layer materials processing(원자층제어박막공정(ALD))
		MSE473 Ultra-fine patterning process(초미세패터닝공정)
		MSE474 Low-dimensional semiconductor materials(저차원 반도체 소재)
		MSE475 Emerging AI Semiconductor Materials and Devices (차세대 인공지능 반도체 소자)
		MSE476 Process integration lab(집적회로공정실험)
		MSE477 Industry-University Joint research (산학연구 프로젝트)
		MSE478 Special Topics on Lithography(리소그라피 특론)
		MSE479 Materials for Organic Electronics(유기전자재료)

School of Energy and Chemical Engineering [에너지화학공학과]

■ School Introduction [학과소개]



The School of Energy and Chemical Engineering (ECHE) at UNIST aims to promote the growth of highly capable and motivated engineers who can address challenges not only in existing chemical processes but in globally emerging topics of energy and environment. By taking core courses of chemical engineering, such as transport phenomena and reactor design, students will gain a deep understanding of the chemical engineering principles, and learn how the principle applies to solving problems in the following areas: design and control of chemical processes, next-generation catalysis, novel functional materials and devices, biosystems and metabolic engineering, artificial intelligence, modeling and simulation of chemical processes, and energy harvesting and storage. Students will have opportunities to evaluate and clarify their career direction by taking laboratory courses and a research internship, both of which are carefully designed and advised by the faculty members in ECHE. Having close ties with leading research institutions and industry partners, both domestic and overseas, ECHE at UNIST also provides a well established academia-industry convergence research program in various fields.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 32 Credits
	Elective 선택[학과 지정]	15	5 mandatory courses designated by school −Calculus II, General Physics II, General Chemistry II, Differential Equations, Introduction to AI Programming II	
Major 전공	Required 필수	33	Refer to the required courses * Additional requirements for graduation 1) Completion of 8 theoretical courses 2) Choosing 2 experimental courses out of 6 3) Undergraduate Thesis Research	At least 51 Credits
	Elective 선택	18	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		14	All courses accepted	At least 14 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			15 credits	15 credits	15 credits
1	MTH112	Calculus Ⅱ(3)	●	●	●
2	PHY103	General Physics Ⅱ(3)	●	●	●
3	CHM102	General Chemistry Ⅱ(3)	●	●	●
4	PHY108	General Physics Lab Ⅱ(1)			
5	CHM106	General Chemistry Lab Ⅱ(1)			
6	MTH201	Differential Equations (3)	●	●	●
7	MTH203	Applied Linear Algebra (3)			
8	MTH211	Statistics (3)			
9	MGT102	Entrepreneurship (3)			
10	IE101	Introduction to Data Science(3)			
11	ITP117	Introduction to AI Programming Ⅱ(3)	●	●	●
12	ITP111	Probability & Random Process (3)			
13	ITP112	Discrete Mathematics (3)			
14	UNI104	Understanding Major (1) **Trends in Energy & Chemical Engineering**			

●: Required ○: Elective ◑: Recommended, ( ): credits

※ Understanding Major 'Trends in Energy & Chemical Engineering (에너지화학공학 소개)' course is recommended to take as a free elective

※ School required fundamental courses should be completed before the Major Selection

3. Curriculum [에너지화학공학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
School of Energy and Chemical Engineering	33	18	51	33	6	39	18	0	18

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Name	Major	Double	Minor	Cred -Lect -Exp	Remarks	Seme ster
ECHE201	Organic Chemistry I 유기화학 I	○	○	○	3-3-0	[IDEN] CHM211	1
ECHE203	Physical Chemistry I 물리화학 I	○	○	○	3-3-0		1
ECHE212	Introduction to Chemical Process 화학공정개론	○	○	○	3-3-0		1
ECHE223	Energy Materials Lab 에너지 재료실험	○	○		3-0-6		2
ECHE231	Chemical Engineering Thermodynamics 화공열역학	○	○	○	3-3-0		2
ECHE302	Advanced Chemical Engineering Lab 첨단화학공학실험	○	○		3-0-6		1
ECHE311	Chemical Reaction Engineering 반응공학	○	○	○	3-3-0		2

School of Energy and Chemical Engineering

Course Code	Course Name	Major	Double	Minor	Cred -Lect -Exp	Remarks	Seme ster
ECHE331	Transport Phenomena: Momentum, Heat, and Mass Transfer 전달현상: 운동량, 열, 물질전달	○	○	○	3-3-0	[PRE] Required: MTH201 and Choose one among following courses:ECHE203, ECHE231,MEN210, MEN211,UEE324,MSE 203,NE331,CHM336	1
ECHE314	Energy Conversion and Storage Lab 에너지변환 및 저장실험	○	○		3-0-6		2
ECHE323	Solar Cells Lab 태양전지실험	○	○		3-0-6		1
ECHE341	Engineering Biology Lab 생물화학공학실험	○	○		3-0-6		2
ECHE351	Introduction to Polymer Science and Engineering 고분자과학개론	○	○		3-3-0	[PRE] ECHE201 [IDEN] CHM372,MSE270	1
ECHE352	Advanced Fluid Mechanics 고급유체역학	○	○		3-3-0		2
ECHE361	Organic/Physical Chemistry Lab 유기물리화학실험	○	○		3-0-6		2
ECHE490	Undergraduate Thesis Research 학사졸업논문연구	○	○		3-0-6		1,2

*Courses that are not required for Minor can be counted as Elective course

▶ Elective [전공선택]

Course Code	Course Name	Major	Double	Minor	Cred -Lect -Exp	Remarks	Seme ster
ECHE202	Organic Chemistry II 유기화학 II	○	○		3-3-0	[IDEN] CHM212	2
ECHE213	Analytical Chemistry 분석화학	○	○		3-3-0	[IDEN] CHM291	1
ECHE218	Fundamentals of Energy Conversion Systems 에너지 변환 시스템 개론	○	○		3-3-0		-
ECHE222	Physical Chemistry II: Kinetics 물리화학 II: 동역학	○	○		3-3-0		2
ECHE240	Engineering Biochemistry 공학생화학	○	○		3-3-0		2
ECHE241	Fundamentals of Engineering Biology 공학생물학	○	○		3-3-0	[PRE] BIO101	1
ECHE242	Machine Learning for Chemical Engineering 화학공학 머신러닝	○	○		3-3-0		1
ECHE243	AI/Machine Learning for Chemical Engineering 화학공학을 위한 AI/머신러닝	○	○		3-3-0		-
ECHE251	Introduction to Carbon Neutral Technology 탄소중립기술개론	○	○		3-3-0	[IDEN] CN202	1
ECHE301	Computational Methods for Chemical Engineering 화학공학전산	○	○		3-3-0		2
ECHE304	Inorganic Chemistry I 무기화학 I	○	○		3-3-0		1
ECHE312	Electrochemistry 전기화학	○	○		3-3-0		1
ECHE313	Solid State Chemistry 고체화학	○	○		3-3-0	[IDEN] CHM454	1
ECHE315	Introduction to Crystallography 결정학개론	○	○		3-3-0		1

Course Code	Course Name	Major	Double	Minor	Cred -Lect -Exp	Remarks	Semester
ECHE316	Electronic Devices 전자소자	○	○		3-3-0		-
ECHE317	Fundamentals of Energy Materials 에너지재료개론	○	○		3-3-0	[IDEN] CHM313	1
ECHE320	Electrocatalysis 전기화학 촉매반응	○	○		3-3-0		1
ECHE321	Polymer Material Science 고분자재료과학	○	○		3-3-0		2
ECHE322	Instrumental Analysis 기기분석	○	○		3-3-0	[IDEN] CHM391	1
ECHE324	Computational Materials Science 전산재료과학	○	○		3-3-0		1
ECHE326	Inorganic Chemistry II 무기화학 II	○	○		3-3-0		2
ECHE340	Biochemical Engineering 생물화학공학	○	○		3-3-0		1
ECHE342	Machine Learning Based Analysis for Biocatalysts 머신러닝을 이용한 생촉매 분석	○	○		3-3-0		1
ECHE350	AI-driven Design of Energy Materials and Process 인공지능 기반 에너지 소재 및 공정 설계	○	○		3-3-0		2
ECHE402	Separation Process 분리공정	○	○		3-3-0		1
ECHE410	Phase Transformation 재료상변태	○	○		3-3-0		2
ECHE412	Principle of Solution Processing 용액공정개론	○	○		3-3-0		-
ECHE413	Introduction to New Energy Conversion and Storage 신에너지 변환 및 저장개론	○	○		3-3-0		2
ECHE416	Introduction to Nanoscience and Nanotechnology 나노과학 및 기술	○	○		3-3-0	[IDEN] CHM371	-
ECHE422	Fundamentals of Electrochemical System 전기화학시스템개론	○	○		3-3-0	[PRE] ECHE203	-
ECHE423	Introduction to Application Technologies of Energy Devices: ESS &EV 에너지기기응용기술개론: ESS & EV	○	○		3-3-0		1
ECHE431	Introduction to Catalysis 촉매개론	○	○		3-3-0		2
ECHE432	Chemical Engineering Mathematics 화공수학	○	○		3-3-0		2
ECHE441	Introduction to Molecular Biotechnology 분자생물공학	○	○		3-3-0		-
ECHE442	Process Design and Economics 공정설계 및 경제성	○	○		3-3-0		2
ECHE443	Chemical Process Control 공정제어	○	○		3-3-0		1
ECHE450	Special Topics in Energy and Chemical Engineering I 에너지화학공학 특론 I	○	○		3-3-0		-
ECHE451	Special Topics in Energy and Chemical Engineering II 에너지화학공학 특론 II	○	○		3-3-0		-
ECHE452	Special Topics in Energy and Chemical Engineering III 에너지화학공학 특론 III	○	○		3-3-0		-
ECHE453	Special Topics in Energy and Chemical Engineering IV 에너지화학공학 특론 IV	○	○		3-3-0		-

School of Energy and Chemical Engineering

Course Code	Course Name	Major	Double	Minor	Cred -Lect -Exp	Remarks	Semester
ECHE454	Special Topics in Energy and Chemical Engineering V 에너지화학공학 특론 V	○	○		3-3-0		-
BME437	AI-based Affective Engineering AI 기반 감성공학	○	○		3-3-0	Refer to each department section	
CHM232	Physical Chemistry II 물리화학 II	○	○		3-3-0		
CHM291	Analytical Chemistry I 분석화학 I	○	○		3-3-0		
CHM333	Physical Chemistry III 물리화학 III	○	○		3-3-0		
IE308	Service Intelligence 서비스지능	○	○		3-3-0		
MEN456	Artificial Intelligence Based Digital Manufacturing AI 기반 디지털 제조 공학	○	○		3-3-0		
MEN472	Creating Autonomous Car 자율주행 자동차 만들기	○	○		3-3-0		
MSE316	Wearable smart healthcare electronic system 웨어러블 스마트 헬스케어 전자소자 시스템	○	○		3-3-0		
MSE403	Thin Film Technology 박막공학	○	○		3-3-0		
MSE452	Nano Semiconductor Devices 나노반도체소자	○	○		3-3-0		
MSE454	Nano-Materials Reliability 나노소재신뢰성	○	○		3-3-0		
NE370	Nuclear Power Plant Accident Diagnosis using AI Techniques AI를 이용한 원전 사고 진단	○	○		3-3-0		
PHY451	Network Science and Machine Intelligence 네트워크과학과 기계지능	○	○		3-3-0		
CUEE206	Science Humanities 과학인문학	○	○		3-3-0		
CUEE337	Building collapse and safety inspection techniques 건물 붕괴와 안전진단 기술	○	○		3-3-0		
UNI201	Photodynamic Therapy 광역동 치료	○	○		1-1-0		
UNI202	Blockchain and Cryptocurrencies 블록체인과 암호화폐	○	○		1-1-0		
UNI203	Design and Implementation of data-driven machine learning 데이터기반 머신러닝 설계 및 제작	○	○		1-1-0		
UNI205	Dynamic Programming and its Applications 동적계획법과 사회기업문제	○	○		1-1-0		

※ [PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

2025	→	2026
<New>	→	ECHE243 AI/Machine Learning for Chemical Engineering 화학공학을 위한 AI/머신러닝
ECHE202 Organic Chemistry II 유기화학II [Semester] 1		ECHE202 Organic Chemistry II 유기화학II [Semester] 2

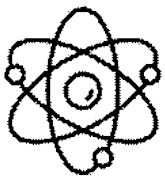
4. Curriculum Map [교육과정 이수 체계도]

1st semester, Sophomore	2nd semester, Sophomore	1st semester, Junior	2nd semester, Junior	1st semester, Senior	2nd semester, Senior
[ECHE201] Organic Chemistry I 유기화학 I	[ECHE231] Chemical Eng. Thermodynamics 화공열역학	[ECHE331] Transport Phenomena 전달현상	[ECHE311] Chemical Reaction Engineering 반응공학	–	[ECHE490] Undergraduate Thesis Research 학사졸업논문연구
[ECHE203] Physical Chemistry I 물리화학 I	[ECHE223] Lab for Energy Materials 에너지재료실험	[ECHE351] Introduction to Polymer Science and Engineering 고분자과학개론	[ECHE352] Advanced Fluid Mechanics 고급유체역학	–	–
[ECHE212] Intro to Chemical Process 화학공정개론		[ECHE302] Advanced Chemical Engineering Lab 첨단화학공학실험	[ECHE361] Organic/Physical Chemistry Lab 유기물리화학실험	–	–
		[ECHE323] Solar Cells Lab 태양전지실험	[ECHE341] Engineering Biology Lab 생물화학공학실험	–	–
			[ECHE314] Energy Conversion and Storage Lab 에너지변환 및 저장실험		

* You should choose 2“Lab” courses out of total 6 for graduation, so the “Lab” courses written above table could be optional.

Department of Nuclear Engineering
[원자력공학과]

■ Department Introduction [학과소개]



Nuclear Engineering is comprised of various science and engineering branches, such as nuclear reactor physics, radiation engineering, nuclear safety engineering, thermohydraulics, nuclear materials engineering, radiation material science, nuclear fuel cycle engineering, health physics, nuclear policy, nuclear material safeguards and non-proliferation, nuclear power plant decontamination and decommissioning, and nuclear fusion science and engineering, and also medical radiation science with artificial intelligence(AI). Department of Nuclear Engineering currently has 10 faculty members and provides a variety of courses covering almost all the branches of nuclear science and engineering above mentioned. The thoroughness of our program will promote students to be fully qualified nuclear scientists and engineers who can compete globally.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 30 Credits
	Elective 선택[학과 지정]	13	Complete at least 13 credits including Applied Linear Algebra(3), Differential Equations(3), Calculus II(3) and Statistics(3)	
Major 전공	Required 필수	27	Refer to Required course list below Graduation thesis required(No credits for thesis)	At least 54 Credits
	Elective 선택	27	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		13	All courses acceptable	At least 13 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			13 credits	6 credits	-
1	MTH112	Calculus Ⅱ(3)	●		
2	PHY103	General Physics Ⅱ(3)	○		
3	CHM102	General Chemistry Ⅱ(3)	○		
4	PHY108	General Physics Lab Ⅱ(1)	○		
5	CHM106	General Chemistry Lab Ⅱ(1)	○		
6	MTH201	Differential Equations (3)	●	●	
7	MTH203	Applied Linear Algebra (3)	●	●	
8	MTH211	Statistics (3)	●		
9	MGT102	Entrepreneurship (3)	○		
10	IE101	Introduction to Data Science(3)	○		
11	ITP117	Introduction to AI Programming Ⅱ(3)	○		
11	ITP111	Probability & Random Process (3)	○		
12	ITP112	Discrete Mathematics (3)	○		
14	UNI105	Understanding Major (1) **The Future of Nuclear Engineering**	◑		

●: Required ○: Elective ◑: Recommended, ( ): credits

* It is recommended to take 'The future of Nuclear Engineering' course for double major

3. Curriculum [원자력공학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Nuclear Engineering	27	27	**54**	15	21	**36**	3	15	**18**

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double[1)]	Minor	Cred -Lect -Exp	Remark	Seme ster
NE200	Fundamentals of Nuclear Engineering 원자력공학개론	○	○	○	3-3-0		1
NE210	Nuclear Radiation Engineering&Experiment 원자력방사선공학 및 실험	○	○		3-2-2		1
NE220	Nuclear Materials Engineering & Experiment 원자력재료공학 및 실험	○	○		3-2-2		2
NE300	Introduction to Nuclear Reactor Theory 원자로이론 개론	○	○		3-3-0		2
NE310	Nuclear System Engineering & Experiment 원자로계통공학 및 실험	○	○		3-2-2		2
NE320	Introduction to Nuclear Reliability Engineering 신뢰도 공학 개론	○	○		3-3-0		1
NE340	Introduction to Nuclear Fuel Cycle Engineering 핵연료주기공학 개론	○	○		3-3-0		1
NE350	Fundamentals of Plasma Physics 플라즈마 물리학 기초	○	○		3-3-0	[IDEN]PHY427	1

Department of Nuclear Engineering

Course Code	Course Title	Major	Double[1)]	Minor	Cred -Lect -Exp	Remark	Seme ster
NE400	Fundamentals of Nuclear Fusion 핵융합개론	○	○		3-3-0		1
NE490	Graduation Thesis 졸업논문	○			0 credit		1,2

1) Double Major: Take 5 courses(15 credits) among 8 courses (Fundamentals of Nuclear Engineering, Nuclear Radiation Engineering & Experiment, Nuclear Materials Engineering & Experiment, Introduction to Nuclear Reactor Theory, Nuclear System Engineering & Experiment, Introduction to Nuclear Fuel Cycle Engineering, Fundamentals of Plasma Physics. Fundamentals of Nuclear Fusion)
1) 복수전공은 원자력공학개론, 원자력방사선공학 및 실험, 원자력재료공학 및 실험, 원자로이론 개론, 원자로계통공학 및 실험, 핵연료주기공학 개론, 플라즈마 물리학 기초, 핵융합개론 중 5개(15학점) 이수
* Courses that are not required for Minor/Double Major can be counted as Elective course
* 복수전공자, 부전공자에게 필수로 인정되지 않는 전공필수 과목을 이수했을 경우 선택으로 인정가능

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Seme ster
NE211	Medical Radiation Engineerirng 의료방사선공학	○	○	○	3-3-0		2
NE230	Introduction to Artificial Intelligence in Medicine 의료인공지능 개론	○	○	○	3-3-0	[IDEN] BME280	2
NE240	Nuclear Chemical Engineering 원자력화학공학	○	○	○	3-3-0		–
NE250	Fundamentals of Electromagnetics 전자기학개론	○	○	○	3-3-0		–
NE251	Scientific Computation in Nuclear Fusion 전산핵융합기초	○	○	○	3-3-0		–
NE301	Scientific Computation in Nuclear Fission 전산핵분열기초	○	○	○	3-3-0		1
NE330	Nuclear Fuel Engineering & Experiment 핵연료공학 및 실험	○	○	○	3-2-2		1
NE331	Thermodynamics and Metallurgy of Nuclear Materials 원자력재료열역학	○	○	○	3-3-0		1
NE341	Radioactive Waste Management 방사성폐기물관리	○	○	○	3-3-0		2
NE370	Nuclear Power Plant Accident Diagnosis using AI Techniques AI를 이용한 원전 사고 진단	○	○	○	3-3-0		2
NE401	Nuclear Reactor Lab 원자로실험	○	○	○	3-0-6		–
NE410	Power Plant Systems and APR1400 Familiarization 원전 계통 공학	○	○	○	3-3-0		1
NE420	Introduction to Nuclear Engineering IT 원자력 IT 개론	○	○	○	3-2-2		2
NE430	Introduction to Radiation Materials Science 방사선재료과학 개론	○	○	○	3-3-0		–
NE440	Instrumentation and Control Systems 원전계측제어시스템	○	○	○	3-3-0		2
NE450	Deep Learning in Medical Imaging 의료영상과 딥러닝	○	○	○	3-3-0		1
NE491	Special Topics on Nuclear Engineering and Science I 원자력공학 및 과학 특론 I	○	○	○	3-3-0		–
NE492	Special Topics on Nuclear Engineering and Science II 원자력공학 및 과학 특론 II	○	○	○	3-3-0		–
NE493	Special Topics on Nuclear Engineering and Science III 원자력공학 및 과학 특론 III	○	○	○	3-3-0		–

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
NE494	Special Topics on Nuclear Engineering and Science IV 원자력공학 및 과학 특론 IV	○	○	○	3-3-0		-
ECHE203	Physical Chemistry I 물리화학 I	○	○		3-3-0		
ECHE322	Instrumental Analysis 기기분석	○	○		3-3-0		
ECHE416	Introduction to Nanoscience and Nanotechnology 나노과학 및 기술	○	○		3-3-0		
MEN210	Thermodynamics 열역학	○	○		3-3-0		
MEN211	Applied Thermodynamics 응용열역학	○	○		3-3-0		
MEN220	Fluid Mechanics 유체역학	○	○		3-3-0		
MEN231	Solid Mechanics II 고체역학 II	○	○		3-3-0		
MEN270	Dynamics 동역학	○	○		3-3-0		
MEN301	Numerical Analysis 수치해석	○	○		3-2-2		
MEN310	Heat Transfer 열전달	○	○		3-3-0	Refer to each department section	
MEN320	Applied Fluid Mechanics 응용유체역학	○	○		3-3-0		
MEN457	Introduction to Electric-Electonic Engineering 전기전자공학개론	○	○		3-3-0		
MSE202	Introduction to Materials Science and Engineering 재료공학개론	○	○		3-3-0		
MSE203	Physical Chemistry I: Thermodynamics 재료물리화학I: 열역학	○	○		3-3-0		
IE313	Time-series Analysis 시계열 분석	○	○	○	3-3-0		
PHY204	Electromagnetism II 전자기학 II	○	○		3-3-0		
PHY301	Quantum Physics I 양자물리학 I	○	○		3-3-0		
PHY303	Thermal and Statistical Physics I 열 및 통계물리학 I	○	○		3-3-0		
PHY315	Solid State Physics I 고체물리학 I	○	○		3-3-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

Department of Nuclear Engineering

4. Curriculum Map [교육과정 이수 체계도]

Sophomore		Junior		Senior	
1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester
(NE200) Fundamentals in Nuclear Engineering	(NE220) Nuclear Materials Engineering & Experiment	(NE300) Introduction to Nuclear Reactor Theory	(NE310) Nuclear System Engineering & Experiment	(NE400) Fundamentals of Nuclear Fusion	(NE420) Introduction to Nuclear Engineering IT
(NE240) Nuclear Chemical Engineering	(NE251) Scientific Computation in Nuclear Fusion	(NE340) Nuclear Fuel Engineering & Experiment	(NE320) Introduction to Nuclear Reliability Engineering	(NE401) Nuclear Reactor Lab	(NE410) Power Plant Systems and APR1400 Familiarization
(NE250) Fundamentals of Electromagnetics	(NE211) Medical Radiation Engineering	(NE350) Fundamentals of Plasma Physics	(NE301) Scientific Computation in Nuclear Fission	(NE430) Introduction to Radiation Materials Science	(NE440) Instrumentation and Control Systems
(NE210) Nuclear Radiation Engineering & Experiment		(NE330) Nuclear Fuel Engineering & Experiment	(NE331) Thermodynamics and Metallurgy of Nuclear Materials		(NE490) Graduation Thesis
		(NE341) Radioactive Waste Management	(NE351) Introduction to Perturbation Methods		
		(NE360) Deep Learning in Medical Imaging	(NE352) Introduction to Plasma Kinetic Theory and Nonlinear Physics		

5. Curriculum Change [교육과정 변경사항]

2025	→	2026
NE301 Nuclear Reactor Numerical Analysis 원자로 수치해석		NE301 Scientific Computation in Nuclear Fission 전산핵분열기초
NE410 Power Plant Systems 원전시스템		NE410 Power Plant Systems and APR1400 Familiarization 원전 계통 공학
UNI209 Creative Design and CAD for SMR 소형원전 설계와 CAD 실습		<Closed>

Graduate School of Carbon Neutrality
[탄소중립대학원]

■ Department Introduction [학과소개]

UNIST Graduate School of Carbon Neutrality sets its sights on developing standard model of carbon neutral education in order to proactively respond to be in line with the rise of the global new paradigm, 2050 carbon neutrality and training scientifically and technologically talented human resources, who have high-quality of professionalism and understanding regarding carbon neutral technology and relevant policy. UNIST Graduate School of Carbon Neutrality will educate and research focusing on 4 topics; carbon dioxide capture·utilization·storage, hydrogen production·transportation·storage, renewable energy including solar cell, and environmental managing policy including ESG. Through newly innovative educational and research program for training convergent talents, students will grow as global experts and play a leading role in the carbon neutral research field at home and abroad. Especially, UNIST Graduate School of Carbon Neutrality which is placed in Ulsan, the city where carbon dioxide emitting industries such as petrochemicals, oil refining, and shipbuilding, etc. are concentrated, is the best venue for developing carbon neutral research and demonstration. Therefore, we will definitely take the lead on accelerating to carbon neutral society by producing outstanding individuals through not only scientific and technological world but also industrial world.

1. Micro Degree Requirement [마이크로전공 이수학점]

Major	Micro(마이크로전공)		
	LECT	EXP	Total
Carbon Neutrality	6	4	10

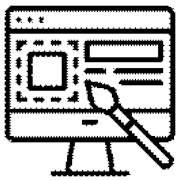
2. Curriculum [탄소중립 마이크로전공 교육과정]

Category	Classification	Course Code	Course Title	Cred. -Lect. -Exp.	Remark	Semester
Required	LECT	CN201	Introduction to Carbon Neutral Policy 탄소중립정책개론	3-3-0	[IDEN] CUEE355	2
		CN202	Introduction to Carbon Neutral Technologies 탄소중립기술개론	3-3-0	[IDEN] ECHE251	1
	EXP	CN301	Carbon Neutral Project I 탄소중립 프로젝트 I	2-0-4		1
		CN302	Carbon Neutral Project II 탄소중립 프로젝트 II	2-0-4		2

College of Information and Biotechnology

Department of Design
[디자인학과]

■ Department Introduction [학과소개]



The goal of the Department of Design is to foster creative designers who can lead the innovative design of product and product-service systems. We will provide interdisciplinary courses on design knowledge, methods and techniques, including problem definition, user and market analysis, needs finding, creative idea generation, form and function development, design engineering, prototyping and business start-up. Students majoring in Design will play an essential role as integrative design thinkers and practitioners in future society, leading positive and innovative change in our society by employing user-centered design and research methods to drive the design and development of innovative design interventions.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 30 Credits
	Elective 선택[학과 지정]	13	Take 13 credits among the basic course list Recommended: 2 courses Elective: 11 courses	
Major 전공	Required 필수	15	Refer to Required course list below	At least 48 Credits
	Elective 선택	33	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		19	All courses accepted	At least 19 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

Department of Design

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			13 Credits	–	–
1	MTH112	Calculus Ⅱ(3)	○		
2	PHY103	General Physics Ⅱ(3)	○		
3	CHM102	General Chemistry Ⅱ(3)	○		
4	PHY108	General Physics Lab Ⅱ(1)	○		
5	CHM106	General Chemistry Lab Ⅱ(1)	○		
6	MTH201	Differential Equations (3)	○		
7	MTH203	Applied Linear Algebra (3)	○		
8	MTH211	Statistics (3)	◑		
9	MGT102	Entrepreneurship (3)	◑		
10	IE101	Introduction to Data Science(3)	○		
11	ITP117	Introduction to AI Programming Ⅱ(3)	○		
12	ITP111	Probability & Random Process (3)	○		
13	ITP112	Discrete Mathematics (3)	○		
14	UNI106	Understanding Major (1) **What is Design?**	◑		

●: Required ○: Elective ◑: Recommended, ( ): credits
*It is recommended to take the above Major recommended courses for Double major/Minor students.

3. Curriculum [디자인학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Design	15	33	48	15	21	36	12	6	18

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred. -Lect. -Exp.	Remark	Semester
DES202	제품 디자인 기초 Product Design Fundamentals	O	O	O	3-2-2		
DES203	서비스 디자인 기초 Service Design Fundamentals	O	O	O	3-2-2		
DES231	시각디자인 기초 Visual Communication Design Fundamentals	O	O	O	3-2-2		
DES332	UX 디자인 연구 방법 UX Design Research Methods	O	O	O	3-2-2		
DES402	제품 서비스 시스템 디자인 Product Service System Design	O	O	–	3-2-2	DES202, DES203 [Pre.]	

※ As a measurement of abolished courses(DES431, DES432), student who've entered before 2025 can take both 'DES231 & DES402' as their required credits to meet the total required credits.

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred. -Lect. -Exp.	Remark	Semester
DES204	탠저블 인터랙션 및 인터페이스 Tangible Interaction and Interfaces	O	O	O	3-3-0		
DES205	디자이너를 위한 AI의 이해 Understanding AI for Designers	O	O	O	3-2-2		
DES232	3D CAD와 프로토타이핑 3D CAD & Prototyping	O	O	O	3-2-2		
DES301	제품 디자인 스튜디오 Product Design Studio	O	O	O	3-2-2		
DES302	서비스 디자인 스튜디오 Service Design Studio	O	O	O	3-2-2		
DES341	기초전기전자실습 Fundamental Electrical-Electronic Practice	O	O	O	3-2-2		
DES403	제품의 이해, 사용과 경험 Product Understanding, Use and Experience	O	O	O	3-3-0	DES505 [Iden.]	
DES404	인간중심 AI 및 디자인 Human-Centered AI and Design	O	O	O	3-3-0	DES605 [Iden.]	
DES405	디자인 포트폴리오와 프리젠테이션 Design Portfolio & Presentation	O	O	O	3-2-2	DES611 [Iden.]	
DES407	디자이너를 위한 시스템 사고 Systems thinking for Designers	O	O	O	3-2-2	DES615 [Iden.]	
DES409	발명적 디자인 Inventive Design	O	O	O	3-2-2	DES517 [Iden.]	
DES411	디자인 역사 연구 Historical Studies in Design	O	O	O	3-3-0	DES609 [Iden.]	
DES412	책임있는 AI 개발을 위한 디자인 Design for Responsible AI Development	O	O	O	3-2-2	DES513 [Iden.]	
DES413	디자인 과정과 방법론 Design Process & Methodology	O	O	O	3-3-0	DES616 [Iden.]	
DES414	양산을 위한 디자인 Design for Manufacture	O	O	O	3-3-0	DES612 [Iden.]	
DES415	디자인 주도 혁신 Design Innovation	O	O	O	3-3-0	DES503 [Iden.]	
DES416	디자인을 통한 도발 Design Provocation	O	O	O	3-2-2	DES614 [Iden.]	
DES417	앰비언트한 것들의 디자인 Designing Ambient Things	O	O	O	3-2-2	DES507 [Iden.]	
DES418	사용자 인터페이스 기초 UI Design Fundamentals	O	O	O	3-2-2	DES508 [Iden.]	
DES419	지속가능성을 위한 디자인 Design for Sustainability	O	O	O	3-3-0	DES510 [Iden.]	
DES442	HRI/HMI를 위한 임베디드 시스템 Embeded Systems for HRI/HMI	O	O	O	3-2-2	IID442, DES604 [Iden.]	
DES491	디자인특론 I Special Topics in Design I	O	O	O	3-2-2		
DES492	디자인특론 II Special Topics in Design II	O	O	O	3-3-0		
DES493	디자인특론 III Special Topics in Design III	O	O	O	3-3-0		

Department of Design

Course Code	Course Title	Major	Double	Minor	Cred. -Lect. -Exp.	Remark	Semester
UNI207	창의적 컴퓨팅과 미디어아트 Creative Computing for Media Art	O	O	O	1-1-0		
BME303	색채과학과 공학 Color Science & Engineering	O	O	O	3-3-0	Refer to each department section	
BME308	감각과 지각 Sensation and Perception	O	O	O	3-3-0		
BME442	실험계획법 Experimental Design	O	O	O	3-3-0		
CSE333	인간-컴퓨터 상호작용 개론 Introduction to Human Computer Interaction	O	O	O	3-3-0		
CSE362	인공지능 Artificial Intelligence	O	O	O	3-3-0		
CSE468	정보시각화 기술 Information Visualization	O	O	O	3-3-0		
CSE469	로보틱스 개론 Introduction to Robotics	O	O	O	3-3-0		
CUEE342	도시개발 Urban Development	O	O	O	3-3-0		
MEN455	3D 프린팅 3D Printing	O	O	O	3-3-0		
MEN456	AI 기반 디지털 제조 공학 Artificial Intelligence Based Digital Manufacturing	O	O	O	3-3-0		
MEN471	로봇공학 Intro to Robotics	O	O	O	3-3-0		
MGT204	마케팅관리 Marketing Management	O	O	O	3-3-0		
UNI202	블록체인과 암호화폐 Blockchain and Cryptocurrencies	O	O	O	1-1-0		
UNI203	데이터기반 머신러닝 설계 및 제작 Design and implementation of data-driven machine learning	O	O	O	1-1-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

2025	→	2026
Elective DES412 책임있는 AI 개발을 위한 디자인 Design for Responsible AI Development 3-3-0		Elective DES412 책임있는 AI 개발을 위한 디자인 Design for Responsible AI Development 3-2-2
Elective DES416 디자인을 통한 도발 Design Provocation 3-3-0	→	Elective DES416 디자인을 통한 도발 Design Provocation 3-2-2

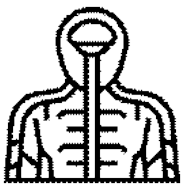
5. Curriculum Map [교육과정 이수 체계도]

Sophomore		Junior		Senior	
Spring	Fall	Spring	Fall	Spring	Fall
3D CAD & Prototyping	Product Design Fundamentals	UX Research Method	Product Understanding Use and Experience	Design Portfolio & Presentation	Product Service System Design
Visual Communication Design Fundamentals	Service Design Fundamentals	Service Design Studio	design Innovation	Designing Ambient Things	Fundamental Electrical-Electronic Practice
	Tangible Interaction and Interfaces	Product Design Studio	Design for Sustainability	Embeded System forHRI	Design Provocation
				Human Centered AI/Design	

Required	Elective

Department of Biomedical Engineering
[바이오메디컬공학과]

■ Department Introduction [학과소개]



Department of biomedical engineering (BME) aims to improve human health by applying advanced engineering principles and methods to medical and biological problems, such as disease diagnostics, health monitoring, treatment, and therapy. In order to meet the increased needs in healthcare, BME at UNIST pursues to train creative global leaders through top-class interdisciplinary research and education programs. Our competitive research programs is focused on selected topics including advanced biomedical devices, rehabilitation and regenerative engineering, genome engineering, brain & cognitive engineering, and digital healthcare.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 33 Credits
	Elective 선택[학과 지정]	16	Recommend: Calculus2(3), General Physics2(3), General Chemistry2(3),Statistics(3), AIP2(3), BME to change the world(1)	
Major 전공	Required 필수	21	Refer to Required course list below	At least 54 Credits
	Elective 선택	33	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		10	All courses accepted	At least 10 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			16 credits	–	–
1	MTH112	Calculus Ⅱ(3)	◑		
2	PHY103	General Physics Ⅱ(3)	◑		
3	CHM102	General Chemistry Ⅱ(3)	◑		
4	PHY108	General Physics Lab Ⅱ(1)	○		
5	CHM106	General Chemistry Lab Ⅱ(1)	○		
6	MTH201	Differential Equations (3)	○		
7	MTH203	Applied Linear Algebra (3)	○		
8	MTH211	Statistics (3)	◑		
9	MGT102	Entrepreneurship (3)	○		
10	IE101	Introduction to Data Science(3)	○		
11	ITP117	Introduction to AI Programming Ⅱ(3)	◑		
12	ITP111	Probability & Random Process (3)	○		
13	ITP112	Discrete Mathematics (3)	○		
14	UNI107	Understanding Major (1) **BME to change the world**	◑		

●: Required ○: Elective ◑: Recommended, ( ): credits

3. Curriculum [바이오메디컬공학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Biomedical Engineering	21	33	**54**	15	24	**39**	12	6	**18**

R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Seme ster
BME210	Engineering Mathematics 공학수학	○	○		3-3-0		1
BME260	Molecular and Cellular Biology 분자세포생물학	○			3-3-0		1
BME261	Molecular and Cellular Biology Experiment 분자세포생물학 실험	△	△	△	3-1-4		1
BME271	Digital Healthcare Experiment 디지털헬스케어 실험	△	△	△	3-1-4		1
BME301	Computational Methods for Biomedical Engineering 생명공학전산	○	○	○	3-3-0		1
BME312	Engineering Physiology 공학생리학	○	○	○	3-3-0		1
BME341	Biostatistics for Engineers 공학통계	○			3-3-0		2
BME490	Capstone Project 캡스톤 프로젝트	○	○	○	3-2-2		1,2

※ Courses that are not required for Minor/Double Major can be counted as Elective course.

※ △: Optionally required course (Required course, but you must choose one of two options, 필수과목이나 둘 중 하나를 선택해야 함)

Department of Biomedical Engineering

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
BME204	Biosensors & Signals 바이오센서와 신호	○	○	○	3-1-4		1
BME206	Cognitive Neuroscience 인지신경과학	○	○	○	3-3-0		2
BME212	Biomedical instrumentation & analysis 의생명기기분석	○	○	○	3-2-2		1
BME213	Biophysical Chemistry 생물물리화학	○	○	○	3-3-0	[PRE] CHM101,CHM102	1
BME219	Optical Imaging 광학이미징	○	○	○	3-3-0		1
BME235	Tissue Engineering 조직공학	○	○	○	3-3-0	[IDEN] MSE360	2
BME280	Artificial Intelligence in Medicine 의과학 AI	○	○	○	3-3-0	[IDEN] NE230,HST200	2
BME281	Basic Biostatistics in Medicine 기초 의과학 생물통계	○	○	○	3-3-0		-
BME282	Introduction to Genomics 게놈학 개론	○	○	○	3-3-0	[IDEN] HST202	2
BME283	Introduction to Biomedical Imaging 의료영상 개론	○	○	○	3-3-0	[IDEN] HST203	2
BME284	Introduction to Regenerative Bioengineering 재생공학개론	○	○	○	3-3-0	[IDEN] HST204	2
BME285	Brain & Cognitive Engineering 뇌인지공학	○	○	○	3-3-0		2
BME286	Introduction to Precision Nanomedicine 정밀나노의학 개론	○	○	○	3-3-0		2
BME287	Introduction to Rehabilitation Engineering 재활공학개론	○	○	○	3-3-0	[IDEN] HST210	2
BME302	Stem Cell Engineering 줄기세포공학	○	○	○	3-3-0		-
BME303	Color Science & Engineering 색채과학과 공학	○	○	○	3-3-0		1
BME304	Brain and Human Behavior Ⅰ - Common to humans 뇌와 인간행동 Ⅰ - 공통특성	○	○	○	3-3-0		1
BME305	Brain and Human Behavior Ⅱ - Difference between humans 뇌와 인간행동 Ⅱ - 개인차	○	○	○	3-3-0		2
BME307	Biomechanics 인체역학	○	○	○	3-3-0		1
BME308	Sensation and Perception 감각과 지각	○	○	○	3-3-0		2
BME309	Decision Making and the Brain 의사결정의 신경과학	○	○	○	3-3-0		1
BME311	Transport Phenomena in Biological Systems 생체유체역학	○	○	○	3-3-0	[PRE] MTH201	1
BME318	Introduction to Network Biology 네트워크생물학개론	○	○	○	3-3-0	[IDEN] PHY330	2
BME321	Biomedical Optics 의광학개론	○	○	○	3-3-0		2
BME326	Genome Technology 게놈응용기술학	○	○	○	3-3-0		1
BME330	Introduction to Digital Healthcare 디지털 헬스케어 개론	○	○	○	3-3-0		2

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
BME313	Biomedical Instrumentation Laboratory 의료기기실험	○	○	○	3-1-4		2
BME332	Neural Interface Device 신경 인터페이스 소자	○	○	○	3-3-0		
BME331	Introduction to Neuroimaging 뉴로이미징 개론	○	○	○	3-3-0		2
BME333	Genetics 유전학	○	○	○	3-3-0	[IDEN] BIO333	2
BME390	Searching for Novel CRISPR/Cas System at Gamak-Pond 가막못에서 새로운 유전자 가위 찾기	○	○	○	3-2-2		2
BME391	DIY custom microscope using your smartphone 스마트폰으로 나만의 현미경 만들기	○	○	○	3-2-2		2
BME401	Special Topics in Biomedical Engineering Ⅰ 바이오메디컬공학특론 Ⅰ	○	○	○	3-3-0		-
BME402	Special Topics in Biomedical Engineering Ⅱ 바이오메디컬공학특론 Ⅱ	○	○	○	3-3-0		-
BME403	Special Topics in Biomedical Engineering Ⅲ 바이오메디컬공학특론 Ⅲ	○	○	○	3-3-0		-
BME407	Bio-imaging and Deep Learning 바이오 이미징과 딥러닝	○	○	○	3-3-0		1
BME408	Introduction to Pharmacology and Pharmaceutics 약리학 및 약제학 개론	○	○	○	3-3-0		2
BME411	Biological Physics 생물물리학	○	○	○	3-3-0		-
BME412	Organ-on-a-chip 생체모사공학	○	○	○	3-3-0		1
BME415	Biomedical Research with Model Organisms 모델 생물을 이용한 생명공학	○	○	○	3-3-0		-
BME423	Geromics(Gerontology) 노화학	○	○	○	3-3-0		1
BME424	Cancer Genomics 암 게놈학	○	○	○	3-3-0		1
BME433	Laser and Biomedical Application 레이저와 바이오 응용	○	○	○	3-3-0		1
BME437	AI-based Affective Engineering AI 기반 감성공학	○	○	○	3-3-0		1
BME440	BME440 Advanced Biophotonics 고급 바이오광학	○	○	○	3-3-0		1
BME442	Experimental Design 실험계획법	○	○	○	3-3-0	[PRE] MTH211	1
BME443	Advanced Biomedical Instruments 최신의료기기	○	○	○	3-3-0		2
BME444	Nano-Bio Engineering 나노바이오공학	○	○	○	3-3-0		1
BME445	Advanced Proteomics 고급 단백질체학	○	○	○	3-3-0		1
BME446	Animal Cell Culture 동물세포공학	○	○	○	3-3-0		1
BME447	AI-based Neural Data Science AI 기반 뇌과학 데이터 사이언스	○	○	○	3-3-0		2
BME460	Advanced Machine Learning and AI in Clinical Medicine	○	○	○	3-3-0		

Department of Biomedical Engineering

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
	고급 의과학 AI						
BME461	Field Practice of Translational Research 중개연구 현장실습	○	○	○	3-2-2		
BIO231	The Chemical Basis of Life 생명현상의 화학적 이해	○	○	○	3-3-0	Refer to each department section	
BIO251	Nobel Prizes and Notable Discoveries 노벨 생리의학상의 이해	○	○	○	3-3-0		
BIO291	Explore the microbes that inhabit the campus 캠퍼스에 서식하는 미생물 탐색	○	○	○	3-2-2		
BIO305	Neuroscience I 신경과학 I	○	○	○	3-3-0		
BIO306	Neuroscience II 신경과학 II	○	○	○	3-3-0		
BIO332	Human Physiology 생리학	○	○	○	3-3-0		
BIO340	Developmental Biology 발생학	○	○	○	3-3-0		
BIO342	Introduction to Immunology in Human Diseases 질환이해를 위한 면역학개론	○	○	○	3-3-0		
BIO341	Immunology 면역학	○	○	○	3-3-0		
BIO434	Genome Integrity and Cancer 유전체 총체성과 암 발생의 이해	○	○	○	3-3-0		
BIO435	Cancer Biology 암생물학	○	○	○	3-3-0		
BIO440	Tissue and Organ Development 조직 및 장기 발생학	○	○	○	3-3-0		
CHM353	AI-Based Digital Chemistry AI 기반 디지털 화학	○	○	○	3-3-0		
CHM421	Introduction to to Chemistry Biology 화학생물학개론	○	○	○	3-3-0		
CSE302	Building Customized Computers 맞춤형 컴퓨터 만들기	○	○	○	3-2-2		
CSE333	Introduction to Human Computer Interaction	○	○	○	3-3-0		
DES203	Service design fundamental 서비스 디자인 기초	○	○	○	3-2-2		
DES205	Understanding AI for Designers 디자이너를 위한 AI의 이해	○	○	○	3-3-0		
DES409	Inventive Design 발명적 디자인	○	○	○	3-3-0		
DES412	Design for Responsible AI Development 책임있는 개발을 위한 디자인	○	○	○	3-3-0		
ECHE240	Engineering Biochemistry 공학생화학	○	○	○	3-3-0		
ECHE340	Biochemical Engineering 생물화학공학	○	○	○	3-3-0		
ECHE441	Introduction to Molecular Biotechnology 분자생물공학	○	○	○	3-3-0		
IE303	Data Mining 데이터 마이닝	○	○	○	3-3-0		
IE307	Statistical Computing 통계계산	○	○	○	3-3-0		
IE313	Time-series Analysis 시계열 분석	○	○	○	3-3-0		
IE406	Applied Machine Learning 기계학습 응용	○	○	○	3-3-0		

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Seme ster
MEN455	3D Printing 3D 프린팅	○	○	○	3-3-0		
MSE316	Wearable smart healthcare electornic system 웨어러블 스마트 헬스케어 전자소사 시스템	○	○	○	3-3-0		
MTH210	Mathematical Foundations of Machine Learning 머신러닝의 수학적 원리	○	○	○	3-3-0		
NE211	Medical Radiation Engineerirng 의료방사선공학	○	○	○	3-3-0		
NE450	Deep Learning in Medical Imaging 의료영상과 딥러닝	○	○	○	3-3-0		
PHY451	Network Science and Machine Intelligence 네트워크과학과 기계지능	○	○	○	3-3-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

2025	→	2026-1
Required BME260 Molecular and Cellular Biology 분자세포생물학 Major ○ Double ○ Minor ○		Required BME260 Molecular and Cellular Biology 분자세포생물학 Major ○ Double Minor
Required BME313 Biomedical Instrumentation Laboratory 의료기기실험		Elective BME313 Biomedical Instrumentation Laboratory 의료기기실험
Required BME441 Biostatistics for Engineers 공학통계		Required BME341 Biostatistics for Engineers 공학통계
Elective BME201 Introduction to Network Biology 네트워크생물학개론		Elective BME318 Introduction to Network Biology 네트워크생물학개론
NEW		(Optionally) Required BME261 Molecular and Cellular Biology Experiment 분자세포생물학 실험
NEW	→	(Optionally) Required BME271 Digital Healthcare Experiment 디지털헬스케어 실험
2025		**2026-2**
NEW		Elective BME287 Introduction to Rehabilitation Engineering 재활공학개론 [IDEN] HST210
Elective BME284 Introduction to Rehabilitation & Regeneration 재활재생 개론		Elective BME284 Introduction to Regenerative Bioengineering 재생공학개론 [IDEN] HST204
Elective BME280 Artificial Intelligence in Medicine 의과학 AI [IDEN] NE230		Elective BME280 Artificial Intelligence in Medicine 의과학 AI [IDEN] NE230, HST200

Department of Biomedical Engineering

2025	→	2026-1
Elective BME282 Introduction to Genomics 게놈학 개론		Elective BME282 Introduction to Genomics 게놈학 개론 [IDEN] HST202
Elective BME283 Introduction to Biomedical Imaging 의료영상 개론		Elective BME283 Introduction to Biomedical Imaging 의료영상 개론 [IDEN] HST203

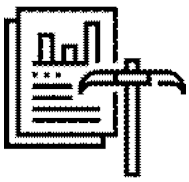
5. Curriculum Map [교육과정 이수 체계도]

	2nd year-Spring	2nd year-Fall	3rd year-Spring	3rd year-Fall	4th year-Spring	4th year-Fall
공통 (필수)	공학수학 Engineering Mathematics BME210		생명공학전산 Computational Methods for BME BME301	공학통계 Biostatistics for Engineers BME341	캡스톤프로젝트 Capstone Project BME490	
	분자세포생물학 Molecular and Cellular Biology BME260					
	분자세포생물학 실험 Molecular and Cellular Biology Experiment BME261					
	디지털헬스케어 실험 Digital Healthcare Experiment BME271					
	공학생리학 Engineering Physiology BME312					
공통	바이오센서와 신호 Biosensors & Signals BME204	의과학AI Artificial Intelligence in Medicine BME280		디지털헬스케어 개론 Introduction to Digital Healthcare BME330	생물물리학 Biological Physics BME411	
	의생명기기분석 Biomedical instrumentation& analysis BME212	기초의 과학 생물통계 Basic Biostatistics in Medicine BME281		의료기기실험 Biomedical Instrumentation Laboratory BME313	고급의과학AI Advanced Machine Learning and AI in Clinical Medicine BME460	
					중개연구 현장실습 Field Practice of Translational Research BME461	
Genomics/ Bioinformatics		게놈학 개론 Introduction to Genomics BME282	게놈응용기술학 Genome Technology BME326	가막못에서 유전자가위찾기 Searching for Novel CRISPR/Cas System at Gamak-pond BME390	고급단백질체학 Advanced Proteomics BME445	암게놈학 Cancer Genomics BME424
			네트워크생물학 Introduction to Network Biology BME318	유전학 Genetics BME333	노화학 Geromics (Gerontology) BME423	모델생물을이용한 생명공학 Biomedical Research with Model Organism BME412
Biomedical Imaging	광학이미징 Optical Imaging BME219	의료영상 개론 Introduction to Biomedical Imaging BME283		스마트폰 현미경 만들기 DIY custom microscope using your smartphone BME391	바이오이미징과딥러닝 Bio-imaging and Deep Learning BME407	최신의료기기 Advanced Biomedical Instruments BME443
				뉴로이미징 개론 Introduction to Neuroimaging BME331	고급 바이오광학 Advanced Biophotonics BME440	레이저와바이오 응용 Lasers and Biomedical Applications BME433

	2nd year-Spring	2nd year-Fall	3rd year-Spring	3rd year-Fall	4th year-Spring	4th year-Fall
				의광학 개론 Biomedical Optics BME321		
Brain & Cognitive Engineering	뇌와 인간행동I Brain and Human Behavior Ⅰ BME304	뇌인지공학 Brain & Cognitive Engineering BME285	의사결정의신경과학 Decision making and the Brain BME309	감각과 지각 Sensation and Perception BME308	AI 감성공학 AI-based Affective Engineering BME437	AI기반 뇌과학 데이터 사이언스 AI-based Neural Data Science BME447
		인지신경과학 Cognitive Neuroscience BME206	색채과학과 공학 Color Science & Engineering BME303		실험계획법 Experimental Design BME442	
			뇌와 인간행동II Brain and Human Behavior Ⅱ BME305			
Rehabilitation & Regeneration		조직공학 Tissue Engineering BME235	인체역학 Biomechanics BME307		동물세포공학 Animal Cell Culture BME446	생체모사공학 Organ-on-a-chip BME412
		재활재생 개론 Intro. to Rehabilitation & Regeneration BME284		신경인터페이스 소자 Neural Interface Device BME332	줄기세포공학 Stem Cell Engineering BME414	
Precision Nanomedicine	생물물리화학 Biophysical Chemistry BME213	정밀나노의학개론 Introduction to Precision Nanomedicine BME286	생체유체역학 Transport Phenomena in Biological System BME311		나노바이오공학 Nano-Bioengineering BME444	약리학및약제학 개론 Intro. to Pharmacology and Pharmaceutics BME408

Department of Industrial Engineering
[산업공학과]

■ Department Introduction [학과소개]



The department of Industrial Engineering (IE) pursues state-of-the-art research and education in order to nurture data scientists who can contribute to the development of problem-solving methodologies and advancement of their applications. Under the vision of “Data-Driven Convergence,” the department of Industrial Engineering (IE) focuses on research into quantitative data analysis techniques such as statistics, optimization, data mining, artificial intelligence, process mining, and financial engineering.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 32 Credits
	Elective 선택[학과 지정]	15	Complete 15 credits including required courses Required: Applied Linear Algebra(3), Statistics(3), AIP2(3)	
Major 전공	Required 필수	24	Refer to Required course list below - Must include Project Lab (3 credits)	At least 48 Credits
	Elective 선택	24	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		17	All courses accepted	At least 17 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			15 credits	15 credits	15 credits
1	MTH112	Calculus Ⅱ(3)	○	○	○
2	PHY103	General Physics Ⅱ(3)			
3	CHM102	General Chemistry Ⅱ(3)			
4	PHY108	General Physics Lab Ⅱ(1)			
5	CHM106	General Chemistry Lab Ⅱ(1)			
6	MTH201	Differential Equations (3)			
7	MTH203	Applied Linear Algebra (3)	●	●	○
8	MTH211	Statistics (3)	●	○	○
9	MGT102	Entrepreneurship (3)			
10	IE101	Introduction to Data Science(3)	○	○	○
11	ITP117	Introduction to AI Programming Ⅱ(3)	●	●	○
12	ITP111	Probability & Random Process (3)	◑	◑	○
13	ITP112	Discrete Mathematics (3)	○	○	○
14	UNI108	Understanding Major (1) **Industrial Engineering Relay Seminar**	○	○	○

●: Required ○: Elective ◑: Recommended, ( ): credits

3. Curriculum [산업공학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Industrial Engineering	24	24	48	15	21	36	9	9	18

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Seme ster
IE201	Operations Research Ⅰ 계량경영학 Ⅰ	○	○	○	3-3-0	[PRE] MTH203	2
IE203	Data Mining 데이터 마이닝	○	○	○	3-3-0		2
IE205	Basic Probability Theory for Engineers 공학도를 위한 기초 확률 이론	○	○	○	3-3-0		1
IE209	Industrial Operations Management 생산운영관리	○	○	○	3-3-0		1
IE304	Data-Driven Process Management 데이터 기반 프로세스 관리	○	○	○	3-3-0		2
IE305	Operations Research Ⅱ 계량경영학 Ⅱ	○	○	○	3-3-0	[PRE] IE201, IE209	1
IE307	Statistical Computing 통계계산	○	○	○	3-3-0	[PRE] MTH211 MTH204 or MTH203 [IDEN] CSE303, EEE354	1
IE313	Time-Series Analysis 시계열 분석	○	○	○	3-3-0	[PRE] MTH211	2
IE450	Project Lab 프로젝트 랩	○	○		3-1-4		1

* IE450 Project Lab is a required course for Majors and Double Majors.
* IE450 Project Lab is not a required course for Minors, and it will not be counted as a free elective.

Department of Industrial Engineering

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
IE306	Applied Machine Learning 기계학습 응용	○	○	○	3-3-0	[PRE] IE203, MTH211	1
IE308	Service Intelligence 서비스 지능	○	○	○	3-3-0	[PRE] IE209	-
IE315	Visiting Research Program 파견 연구 프로그램	○	○	○	3-1-4		-
IE322	Social Network Analysis 사회 연결망 분석	○	○	○	3-3-0		2
IE362	Statistical Quality Management 통계적 품질관리	○	○	○	3-3-0		1
IE363	Introduction to Algorithmic Trading 알고리즘 트레이딩 개론	○	○	○	3-3-0	[PRE] IE305, ITP111	
IE408	Advanced Topics in Data Science 데이터사이언스 심화	○	○	○	3-3-0	[PRE] ITP117, IE203	1
IE412	AI for Finance 금융인공지능	○	○	○	3-3-0		1
IE421	Blockchain Systems 블록체인 시스템	○	○	○	3-3-0		-
IE425	Research Methods in Industrial Engineering 산업공학 연구 방법론	○	○	○	3-3-0		-
IE470	Special Topics in IE Ⅰ IE 특론 Ⅰ	○	○	○	3-3-0		-
IE471	Special Topics in IE Ⅱ IE 특론 Ⅱ	○	○	○	3-3-0		-
IE472	Special Topics in IE Ⅲ IE 특론 Ⅲ	○	○	○	3-3-0		-
UNI202	Blockchain and Cryptocurrencies 블록체인과 암호화폐	○	○	○	1-1-0		1
UNI205	Dynamic Programming and its Applications 동적계획법과 사회기업문제	○	○	○	1-1-0		W
UNI208	Inventory Management Optimization Strategies 재고관리 최적화 전략	○	○	○	1-1-0		2
UNI210	Multi-Criteria Decision Making 다기준 의사결정 기법	○	○	○	1-1-0		2
MEN301	Numerical Analysis 수치해석	○	○	○	3-3-0	Refer to each department section	
MEN353	Manufacturing System Design & Simulation 생산시스템 설계 및 시뮬레이션	○	○	○	3-3-0		
MEN455	3D Printing 3D 프린팅	○	○	○	3-3-0		
MEN472	Creating Autonomous Car 자율주행 자동차 만들기	○	○	○	3-3-0		
NE230	Introduction to Artificial Intelligence in Medicine 의료인공지능 개론	○	○	○	3-3-0		
CUEE206	Science Humanities 과학인문학	○	○	○	3-3-0		
CSE221	Data Structures 데이터구조	○	○	○	3-3-0		
CSE362	Artificial Intelligence 인공지능	○	○	○	3-3-0		
CSE363	Machine Learning 기계학습	○	○	○	3-3-0		
CSE364	Software Engineering 소프트웨어공학	○	○	○	3-3-0		
BME206	Cognitive Neuroscience 인지신경과학	○	○	○	3-3-0		
BME442	Experimental Design 실험계획법	○	○	○	3-3-0	Refer to each department section	

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
MTH251	Mathematical Analysis I 해석학 I	○	○	○	3-3-0		
MTH321	Numerical Analysis 수치해석학	○	○	○	3-3-0		
MTH342	Probability 확률론	○	○	○	3-3-0		
MTH343	Financial Mathematics 금융수학	○	○	○	3-3-0		
MTH344	Mathematical Statistics 수리통계학	○	○	○	3-3-0		
MTH361	Mathematical Modeling and Applications 수리모형방법론	○	○	○	3-3-0		
MTH421	Introduction to Partial Differential Equations 편미분방정식개론	○	○	○	3-3-0		
MTH461	Stochastic Processes 확률과정론	○	○	○	3-3-0		
UNI203	Design and Implementation of Data-Driven Machine Learning 데이터기반 머신러닝 설계 및 제작	○	○	○	3-3-0		
MGT315	Econometrics 계량경제학	○	○	○	3-3-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

2025	→	2026
BME281 Basic Biostatistics in Medicine 기초 의과학 생물통계		Closed

* IE205: 신규 전공필수 과목은 2024 교육과정년도를 따르는 학생들부터 전공필수로 인정되며, 이전 교육과정년도(~2023)를 따르는 학생들에게는 이수 시 전공선택으로 인정됨.
* IE205: Students who follows from 2024 curriculum year (2024~) ☞ Major REQUIRED
Students who follows before 2024 curriculum year (~2023) ☞ Major ELECTIVE
** IE306: 변경된 이수구분은 2024 교육과정년도를 따르는 학생들부터 적용되며, 기 수강생 및 이전 교육과정년도(~2023)를 따르는 학생들에게는 이수 시 전공필수로 인정됨.
** IE306: Students follows from 2024 curriculum year (2024~) ☞ Major ELECTIVE
Students follows before 2024 curriculum year (~2023) ☞ Major REQUIRED

Department of Industrial Engineering

5. Curriculum Map [교육과정 이수 체계도]

Sophomore 1st semester	Sophomore 2nd Semester	Junior 1st semester	Junior 2nd Semester	Senior 1st semester	Senior 2nd Semester
IE205Ⓡ Basic Probability Theory for Engineers	IE201Ⓡ Operations Research I	IE305Ⓡ Operations Research II	E304Ⓡ Data-driven Process Management		
IE209Ⓡ Industrial Operations Management	IE203Ⓡ Data Mining	IE307Ⓡ Statistical Computing	IE313Ⓡ Time-series Analysis	IE450Ⓡ Project Lab	
		IE306Ⓔ Applied Machine Learning	IE308Ⓔ Service Intelligence	IE408Ⓔ Advanced Topics in Data Science	IE425Ⓔ Research Methods in Industrial Engineering
		IE315Ⓔ Visiting Research Program	IE322Ⓔ Social Network Analysis	IE412Ⓔ AI for Finance	
		IE362Ⓔ Statistical Quality Management	IE363Ⓔ Introduction to Algorithmic Trading	IE421Ⓔ Blockchain Systems	

* Ⓡ: Required, Ⓔ: Elective

Department of Biological Sciences
[생명과학과]

■ Department Introduction [학과소개]

Biological Sciences have taken the center stage of science, technology, and industry. Biomedical healthcare industry is the biggest industry; it is more than three times the information-communication industry and the automobile industry combined. All areas of basic science and engineering are focused on Biology. For example, bioinformatics, biomechanics, and biochemical engineering are “hot” areas. Infectious diseases such as the pandemic coronavirus are accelerating this trend even further. The 21 faculty members at the Department of Biological Sciences at UNIST study diseases like cancer, diabetes, and neurodegenerative disease as well as basic biology such as neuroscience, development, and microbes including viruses. They are internationally recognized for their high impact papers published and prestigious research funds obtained. UNIST Biological Sciences will open doors to a bright future.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 32 Credits
	Elective 선택[학과 지정]	15	Required: Applied Linear Algebra(3), Statistics(3)	
Major 전공	Required 필수	26	Refer to Required course list below - Must include Thesis research(3 credits)	At least 54 Credits
	Elective 선택	28	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		11	All Courses Accepted	At least 11 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

Department of Biological Sciences

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			15 credits	6 credits	–
1	MTH112	Calculus Ⅱ(3)	○		
2	PHY103	General Physics Ⅱ(3)	○		
3	CHM102	General Chemistry Ⅱ(3)	○		
4	PHY108	General Physics Lab Ⅱ(1)	○		
5	CHM106	General Chemistry Lab Ⅱ(1)	○		
6	MTH201	Differential Equations (3)			
7	MTH203	Applied Linear Algebra (3)	●	●	
8	MTH211	Statistics (3)	●	●	
9	MGT102	Entrepreneurship (3)			
10	IE101	Introduction to Data Science(3)	○		
11	ITP117	Introduction to AI Programming Ⅱ(3)	○		
12	ITP111	Probability & Random Process (3)			
13	ITP112	Discrete Mathematics (3)			
14	UNI109	Understanding Major (1) **Emerging Issues in Biological Sciences**	○		

●: Required ○: Elective ◑: Recommended, ( ): credits

3. Curriculum [생명과학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Biological Sciences	26	28	54	14	22	36	11	7	18

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Seme ster
BIO201	Molecular Biology 분자생물학	○	○	○	3-3-0		2
BIO211	Biochemistry I 생화학 I	○	○	○	3-3-0		1
BIO241	Microbiology 미생물학	○			3-3-0		–
BIO261	Biochemistry Laboratory 생화학실험	○	○	○	3-1-4		1
BIO293	General Cell Biology 일반세포생물학	○	○	○	3-3-0		2
BIO333	Genetics 유전학	○			3-3-0		2
BIO340	Developmental Biology (How are we made from a single cell?) 발생학 (세포 하나에서 인체가 되기까지의 여행 일지)	○			3-3-0		1

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Seme ster
BIO341	Immunology 면역학	○			3-3-0		1
BIO490	Thesis Research 졸업논문	○	○		3-3-0		1,2

※ Courses that are not required for Minor/Double Major can be counted as Elective course.

※ As a measurement of changed courses(BIO305, BIO330), student's who've entered before 2025 can be taken "BIO305" and "BIO330" as their required credits to meet the total required credits.

※ BIO301 Cell Biology will be classified as a Major Elective for students following the 2026 curriculum year and onward. For students under the previous curriculum year (up to 2025) who have not completed the previous BIO301 Cell Biology, the new required course BIO293 General Cell Biology will be recognized as a Major Requirement upon completion.

BIO301 세포생물학 과목은 2026 교육과정 연도를 따르는 학생들부터 전공선택으로 인정되며, 이전 교육과정 연도(~2025)를 따르는 학생 중 기존 BIO301 세포생물학 미 이수자는 신규 필수과목인 BIO293 일반세포생물학 이수

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Seme ster
BIO202	Molecular Biology Laboratory 분자생물학 실험	○	○	○	3-1-4		2
BIO221	Biochemistry II 생화학 II	○	○	○	3-3-0		2
BIO231	The Chemical Basis of Life 생명현상의 화학적 이해	○	○	○	3-3-0		2
BIO251	Nobel Prizes and Notable Discoveries 노벨 생리의학상의 이해	○	○	○	3-3-0		1
BIO291	Explore the microbes that inhabit the campus 캠퍼스에 서식하는 미생물 탐색	○	○	○	3-2-2		1
BIO292	Practical experiments of immunology in cell biology 세포생물학적 면역 실험	○	○	○	3-1-4		2
BIO301	Cell Biology 세포생물학	○	○	○	3-3-0		1
BIO305	Neuroscience I 신경과학 I	○	○	○	3-3-0		1
BIO306	Neuroscience II 신경과학 II	○	○	○	3-3-0		2
BIO307	Current Topics in Biological Sciences 현대생명과학동향	○	○	○	2-2-0		1
BIO314	Instrumental Bioanalysis 생물기기분석	○	○	○	3-3-0		1
BIO330	Bioinformatics 생정보학	○	○	○	3-3-0		2
BIO332	Human Physiology 생리학	○	○	○	3-3-0		2
BIO342	Introduction to Immunology in Human Diseases 질환이해를 위한 면역학개론	○	○	○	3-3-0		2
BIO361	Cell Biology & Genetics Laboratory 세포생물학 및 유전학실험	○	○	○	3-1-4		2
BIO401	Special Topics in Biological Sciences I 생명과학특론 I	○	○	○	3-3-0		-
BIO402	Special Topics in Biological Sciences II 생명과학특론 II	○	○	○	3-3-0		-
BIO403	Special Topics in Biological Sciences III 생명과학특론 III	○	○	○	3-3-0		-
BIO404	Introduction to Biological Physics 기초생물물리학	○	○	○	3-3-0		1

Department of Biological Sciences

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Seme ster
BIO412	Microbial Physiology 미생물생리학	○	○	○	3-3-0	[PRE] BIO331	-
BIO413	Metabolomics: Understanding Metabolism 대사체학	○	○	○	3-3-0		-
BIO433	Biochemistry of Signal Transduction and Regulation 세포신호전달	○	○	○	3-3-0		1
BIO434	Genome Integrity and Cancer 유전체 총체성과 암 발생의 이해	○	○	○	3-3-0	[PRE] BIO201	1
BIO435	Cancer Biology 암생물학	○	○	○	3-3-0	[PRE] BIO201 or BIO211	1
BIO436	Emerging Principles of Gene Expression 유전자 발현의 이해	○	○	○	3-3-0		1
BIO438	Endocrinology and Metabolism 내분비 및 대사학	○	○	○	3-3-0		2
BIO440	Tissue and Organ Development 조직 및 장기 발생학	○	○	○	3-3-0		2
BIO442	Viral Infection Biology 바이러스 감염 생물학	○	○	○	3-3-0		2
BME206	Cognitive Neuroscience 인지신경과학	○	○	○	3-3-0	Refer to each department section	
BME280	Artificial Intelligence in Medicine 의과학 AI	○	○	○	3-3-0		
BME321	Biomedical Optics 의광학개론	○	○	○	3-3-0		
BME408	Introduction to Pharmacology and Pharmaceutics 약리학 및 약제학 개론	○	○	○	3-3-0		
BME423	Geromics(Gerontology) 노화학	○	○	○	3-3-0		
BME424	Cancer Genomics 암 게놈학	○	○	○	3-3-0		
CHM211	Organic Chemistry I 유기화학 I	○	○	○	3-3-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

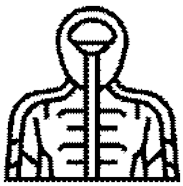
2025	→	2026
BIO301 세포생물학(Cell Biology) 전공필수, 1학기 개설	→	<이수구분 변경> BIO301 세포생물학(Cell Biology) 전공선택, 1학기 개설
		<NEW> BIO292 세포생물학적 면역 실험 Practical experiments of immunology in cell biology 전공선택, 2학기 개설
		<NEW> BIO293 일반세포생물학 General Cell Biology 전공필수, 2학기 개설
BIO333 유전학(Genetics) 전공필수, 2학기 개설 선이수 BIO201 or BIO211		<선이수 해제> BIO333 유전학(Genetics) 전공필수, 2학기 개설 선이수 X

5. Curriculum Map [교육과정 이수 체계도]

2nd year-Spring	2nd year-Fall	3rd year-Spring	3rd year-Fall	4th year-Spring	4th year-Fall
Biochemistry I	Molecular Biology Laboratory	Cell Biology	Neuroscience II	Introduction to Biological Physics	Microbial Physiology
Microbiology	Biochemistry II	Neuroscience I	Bioinformatics	Biochemistry of Signal Transduction and Regulation	Endocrinology and Metabolism
Nobel Prizes and Notable Discoveries	The Chemical Basis of Life	Current Topics in Biological Sciences	Human Physiology	Cancer Biology	Tissue and Organ Development
Biochemistry Laboratory	Practical experiments of immunology in cell biology	Instrumental Bioanalysis	Genetics	Emerging Principles of Gene Expression	Metabolomics: Understanding Metabolism
Explore the microbes that inhabit the campus		Genome Integrity and Cancer	Introduction to Immunology in Human Diseases		Viral Infection Biology
Molecular Biology		Developmental Biology	Cell Biology & Genetics Laboratory		
	General Cell Biology	munology			

Graduate School of Health Science and Technology [의과학대학원]

■ Department Introduction [학과소개]



Medicine, traditionally based on the life sciences, is progressively integrating with artificial intelligence, data science, biomedical engineering, and others, moving towards the era of smart precision medicine. The Graduate School of Health Science and Technology is planning research in sync with these changes in collaboration with various departments within the College of Information and Biotechnology and, more broadly, within UNIST to create a healthier life for humanity. By utilizing networks with large domestic hospitals, medical schools, and international collaborations, we carry out educational programs and research projects that were impossible under the previous system to promote applications in health practice and industry by building an innovative environment. We envision a future where ideas from medicine, engineering, and science converge in this integrated environment via dynamic interactions between doctors who understand engineering and engineers who understand medicine, leading to new research sprouting and eventually being practical and industrialized.

1. Micro Degree Requirement [마이크로전공 이수학점]

Major	Micro(마이크로전공)		
	LECT	EXP	Total
Health Science and Technology	9	2	11

2. Curriculum [의과학 마이크로전공 교육과정]

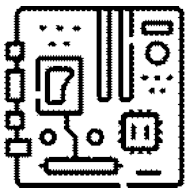
Category	Classification	Course Code	Course Title	Cred. -Lect. -Exp.	Remark	Semester
Required	LECT	HST200	Artificial Intelligence in Medicine 의과학 AI	3-3-0	[IDEN] BME280 NE230	2
	EXP	HST401	Capstone Design in Health Science and Technology 의과학 캡스톤 디자인	2-0-4	New	-
Elective 1	LECT	HST202	Introduction to Genomics 게놈학 개론	3-3-0	[IDEN] BME282	2
		HST203	Introduction to Biomedical Imaging 의료영상 개론	3-3-0	[IDEN] BME283	2
		HST204	Introduction to Regenerative Bioengineering 재생공학개론	3-3-0	[IDEN] BME284	2
		HST205	Brain & Cognitive Engineering 뇌인지공학	3-3-0	[IDEN] BME285	2
		HST206	Introduction to Precision Nanomedicine 정밀나노의학 개론	3-3-0	[IDEN] BME286	2
		HST207	Practical experiments of immunology in cell biology 세포생물학적 면역 실험	3-3-0	[IDEN] BIO292	2

Category	Classification	Course Code	Course Title	Cred. -Lect. -Exp.	Remark	Semester
		HST208	Global Health 글로벌 헬스	3-3-0		2
		HST209	Medical Chemistry 의화학	3-3-0	[IDEN] CHM222	2
		HST210	Introduction to Rehabilitation Engineering 재활공학개론	3-3-0	[IDEN] BME287	2
Elective 2	LECT	HST402	Translational Research Seminar: Experts' Perspectives on Human Disease and Convergent Innovation 질병중심 중개연구 세미나	3-3-0	New	1

※ Students must select and complete 1 course from Elective1(HST202, HST203, HST204, HST205, HST206, HST207, HST208, HST209, HST210) and 1 course from Elective2.

Department of Electrical Engineering
[전기전자공학과]

■ Department Introduction [학과소개]



Electrical engineering (EE) is a field of engineering that deals with everything from solid-state devices and designing integrated circuits to developing information and control systems. It focuses on research and development of IT convergence systems which are capable of enriching the future life of human being to be pleasant, secured, convenient and socially connected. A broad range of IT technologies in the EE areas are to be proactively merged together to create new benefits with the advent of ubiquitous information society driven by digital convergence.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 33 Credits
	Elective 선택[학과 지정]	16	Required: Calculus Ⅱ(3), Differential Equations(3), Applied Linear Algebra(3), Introduction to Modern Electrical Engineering(1) Elective: 6 credits of elective or recommended courses from the list (Total 16 credits)	
Major 전공	Required 필수	21	Refer to the required course list provided below.	At least 48 Credits
	Elective 선택	27	Refer to the elective course list provided below.	
	Internship 인턴십	3	Complete one of the following internship options: Research Internship, Industrial Internship, Venture Creation Internship or Coop Program	3 Credits
Free Elective 자유선택		16	All courses are accepted	At least 16 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			16 credits	**10 credits**	**10 credits**
1	MTH112	Calculus Ⅱ(3)	●	●	●
2	PHY103	General Physics Ⅱ(3)	◑		
3	CHM102	General Chemistry Ⅱ(3)	○		
4	PHY108	General Physics Lab Ⅱ(1)	○		
5	CHM106	General Chemistry Lab Ⅱ(1)	○		
6	MTH201	Differential Equations (3)	●	●	●
7	MTH203	Applied Linear Algebra (3)	●	●	●
8	MTH211	Statistics (3)	○		
9	MGT102	Entrepreneurship (3)	○		
10	IE101	Introduction to Data Science(3)	○		
11	ITP117	Introduction to AI Programming Ⅱ(3)	◑		
12	ITP111	Probability & Random Process (3)	◑		
13	ITP112	Discrete Mathematics (3)	○		
14	UNI110	Understanding Major (1) **Introduction to Modern Electrical Engineering**	●	●	●

●: Required ○: Elective ◑: Recommended, ( ): credits

* Students pursuing a double major or minor should complete the basic required courses—Calculus II, Differential Equations, Applied Linear Algebra, and Introduction to Modern Electrical Engineering—before selecting or transferring to their major, or within the first semester thereafter.

* UNI110 Introduction to Modern Electrical Engineering is offered **only in the Fall semester** from 2026.

3. Curriculum [전기전자공학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Electrical Engineering	21	27	**48**	18	18	**36**	18	0	**18**

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
EEE201	Basic Circuit Theory and Laboratory 회로이론 및 실험	○	○	○	4-3-2		1
EEE202	Digital Logic and Laboratory 디지털로직 및 실험	○	○	○	4-3-2		2
EEE204	Electromagnetics I 전자기학 I	○	○	○	3-3-0		1
EEE205	Signals and Systems 신호 및 시스템	○	○	○	3-3-0		2
EEE301	Communications and Information Theory 통신 및 정보 이론	○	○	○	3-3-0	[PRE] ITP111	1
EEE302	Electric Energy Systems	○	○	○	3-3-0	[PRE]	1

Department of Electrical Engineering

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
	전기에너지시스템					EEE201	
EEE303	Microelectronics I and Laboratory 전자회로 I 및 실험	○	○	○	4-3-2	[PRE] EEE201	2
EEE304	Semiconductor Engineering 반도체공학	○	○	○	3-3-0		1
EEE490	Undergraduate Research 졸업연구	○	-	-	3-3-0		1,2

* Students pursuing a major must complete at least six courses (18 credits) out of eight, including EEE490 Undergraduate Research.
* Students pursuing a double major or a minor must complete at least six courses (18 credits) out of eight, excluding EEE490
Undergraduate Research.
* EEE490 Undergraduate Research is not required for minors or double majors and does not count toward free elective.

▶ Elective [전공선택]

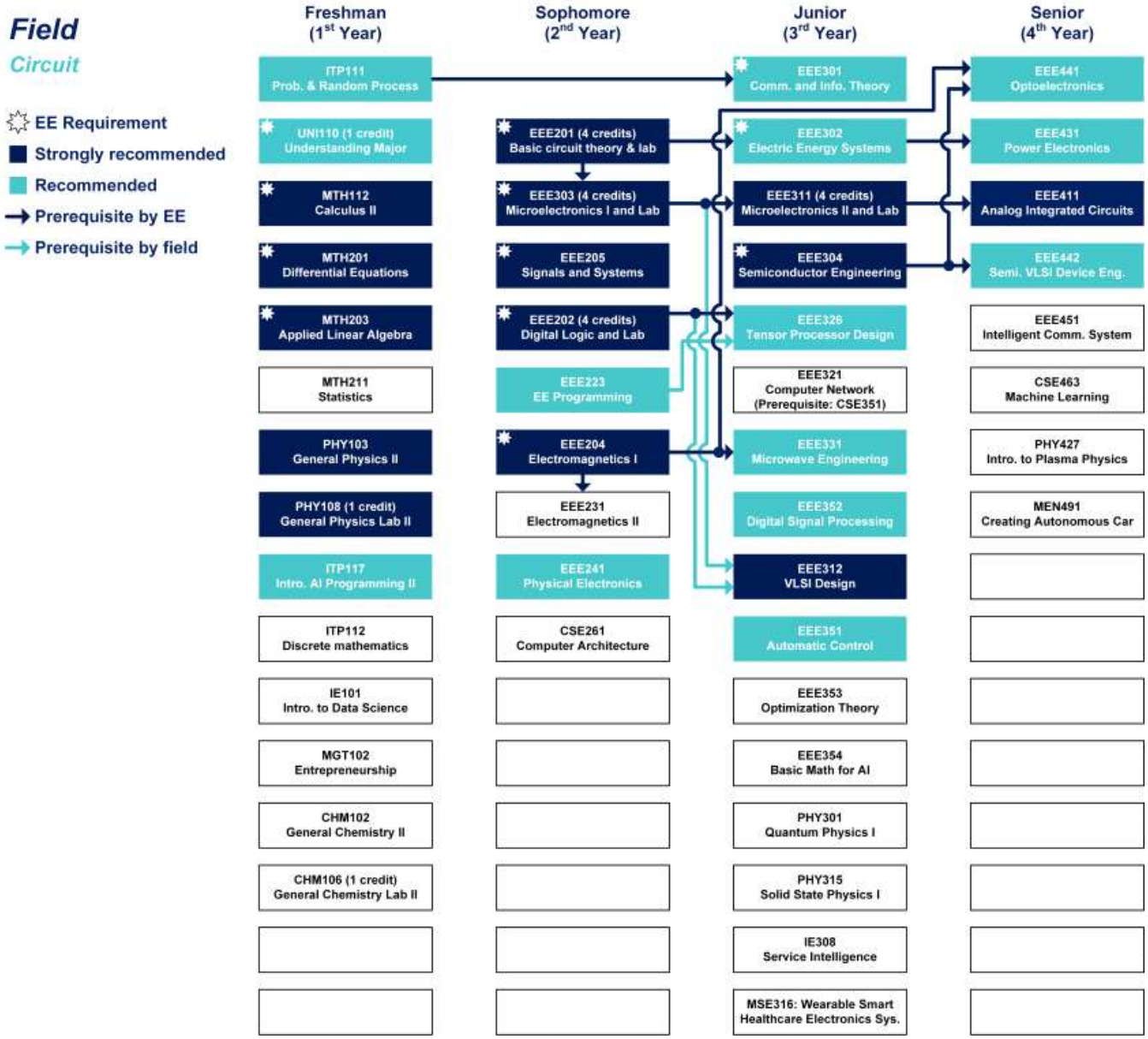
Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
EEE223	Electrical Engineering Programming 전기전자공학 프로그래밍	○	○	○	3-3-0		1
EEE231	Electromagnetics II 전자기학 II	○	○	○	3-3-0	[PRE] EEE204	2
EEE241	Physical Electronics 물리전자	○	○	○	3-3-0		2
EEE311	Microelectronics II and Laboratory 전자회로 II 및 실험	○	○	○	4-3-2	[PRE] EEE303	1
EEE312	VLSI Design 초고밀도 집적회로 설계	○	○	○	3-3-0		2
EEE321	Computer Networks 컴퓨터 네트워크	○	○	○	3-3-0	[IDEN] CSE351	2
EEE331	Microwave Engineering 마이크로파공학	○	○	○	3-3-0	[PRE] EEE204	2
EEE351	Automatic Control 자동제어	○	○	○	3-3-0		1
EEE352	Digital Signal Processing 디지털신호처리	○	○	○	3-3-0		2
EEE353	Optimization Theory 최적화이론	○	○	○	3-3-0		-
EEE354	Basic Math for AI 인공지능을 위한 기초수학	○	○	○	3-3-0	[IDEN] CSE303 IE307	
EEE411	Analog Integrated Circuits 아날로그 집적회로 설계	○	○	○	3-3-0	[PRE] EEE311	-
EEE426	Tensor Processor Design for Image Recognition 영상 인식을 위한 텐서 프로세서 설계	○	○	○	3-1-4	[PRE] EEE202	1
EEE431	Power Electronics 전력전자공학	○	○	○	3-3-0		2
EEE441	Optoelectronics 광전자공학	○	○	○	3-3-0	[PRE] EEE204EEE304	1
EEE442	Semiconductor VLSI Devices Engineering 반도체집적소자공학	○	○	○	3-3-0	[PRE] EEE304	2
EEE451	Intelligent Communication System	○	○	○	3-3-0		

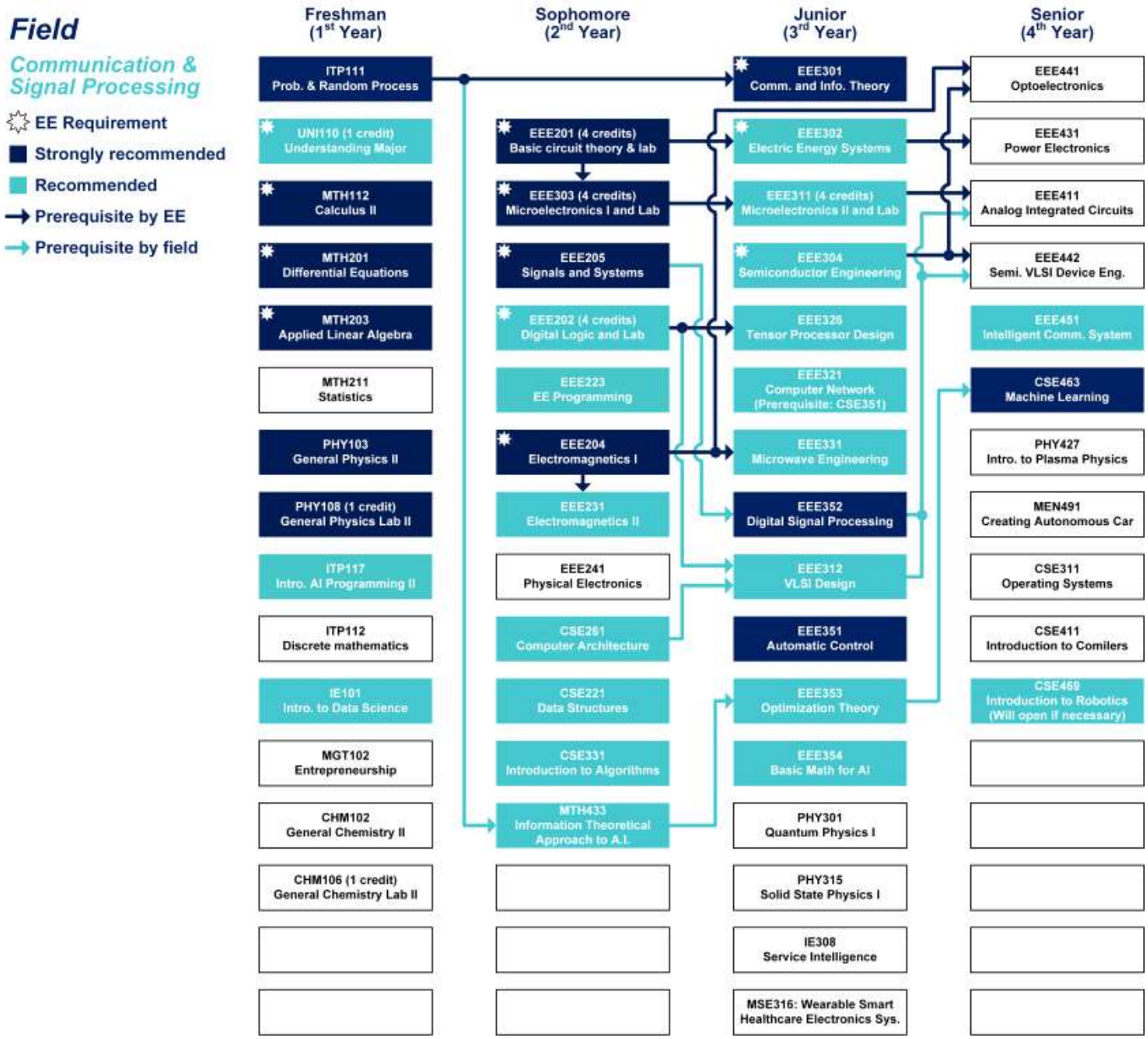
Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Seme ster
	지능형 통신 시스템						
EEE480	Special Topics in EE Ⅰ 전자 및 전기공학특론 Ⅰ	○	○	○	3-3-0		-
EEE481	Special Topics in EE Ⅱ 전자 및 전기공학특론 Ⅱ	○	○	○	3-3-0		-
EEE482	Special Topics in EE Ⅲ 전자 및 전기공학특론 Ⅲ	○	○	○	3-3-0		-
EEE483	Special Topics in EE Ⅳ 전자 및 전기공학특론 Ⅳ	○	○	○	3-3-0		-
EEE484	Special Topics in EE Ⅴ 전자 및 전기공학특론 Ⅴ	○	○	○	3-3-0		-
EEE485	Special Topics in EE Ⅵ 전자 및 전기공학특론 Ⅵ	○	○	○	3-3-0		-
MEN472	Creating Autonomous Car 자율주행 자동차 만들기	○	○	○	3-3-0	Refer to each department section	
MSE316	Wearable Smart Healthcare Electornic System 웨어러블 스마트 헬스케어 전자소자 시스템	○	○	○	3-3-0		
CSE261	Computer Architecture 컴퓨터구조	○	○	○	3-3-0		
CSE363	Machine Learning 기계학습	○	○	○	3-3-0		
IE308	Service Intelligence 서비스 지능	○	○	○	3-3-0		
PHY301	Quantum Physics Ⅰ 양자물리학 Ⅰ	○	○	○	3-3-0		
PHY315	Solid State Physics Ⅰ 고체물리학 Ⅰ	○	○	○	3-3-0		
PHY427	Introduction to Plasma Physics 플라즈마 물리학 입문	○	○	○	3-3-0		
UNI202	Blockchain and Cryptocurrencies 블록체인과 암호화폐	○	○	○	1-1-0		
UNI203	Design and Implementation of Data-Driven Machine Learning 데이터기반 머신러닝 설계 및 제작	○	○	○	1-1-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

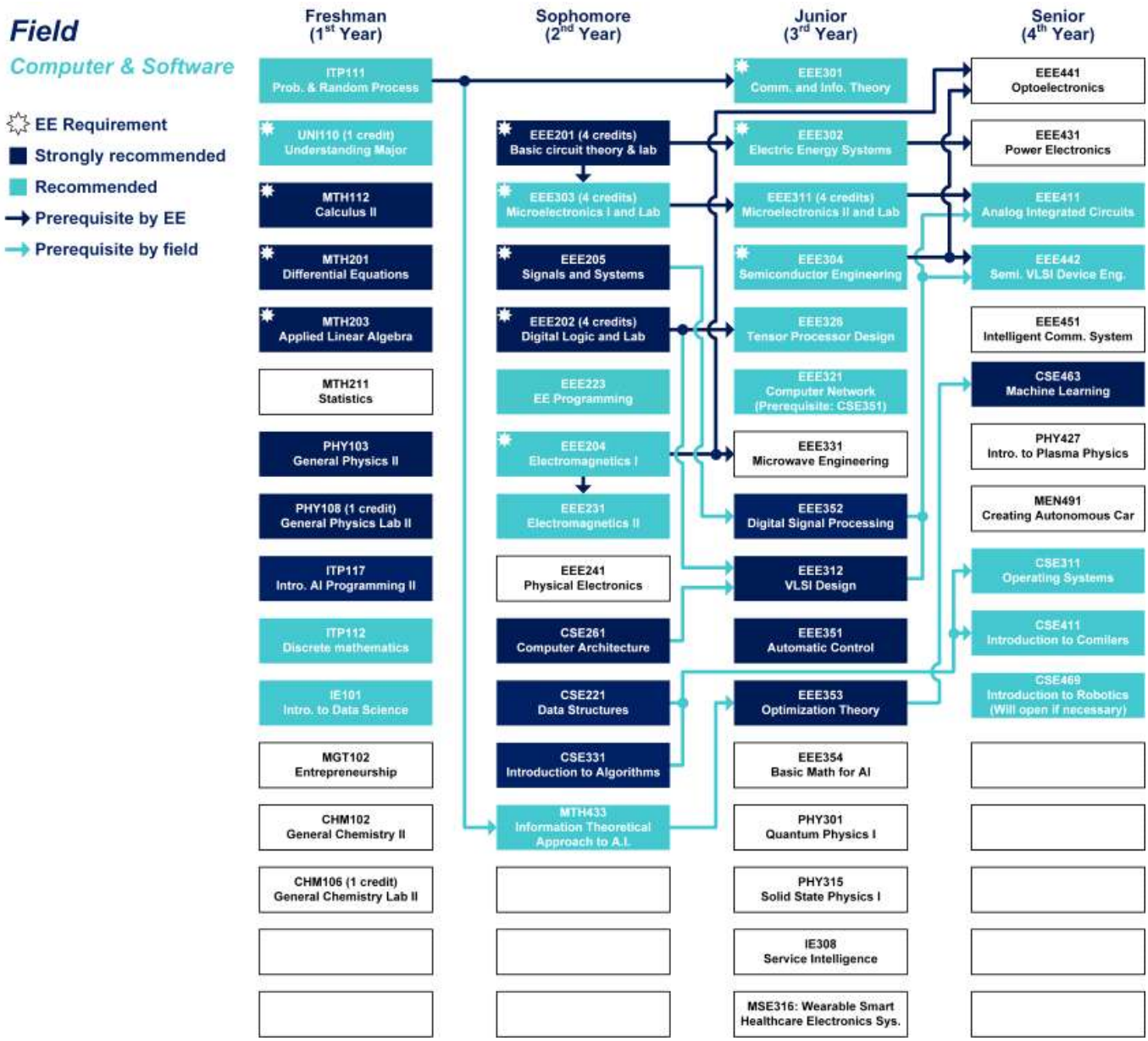
Department of Electrical Engineering

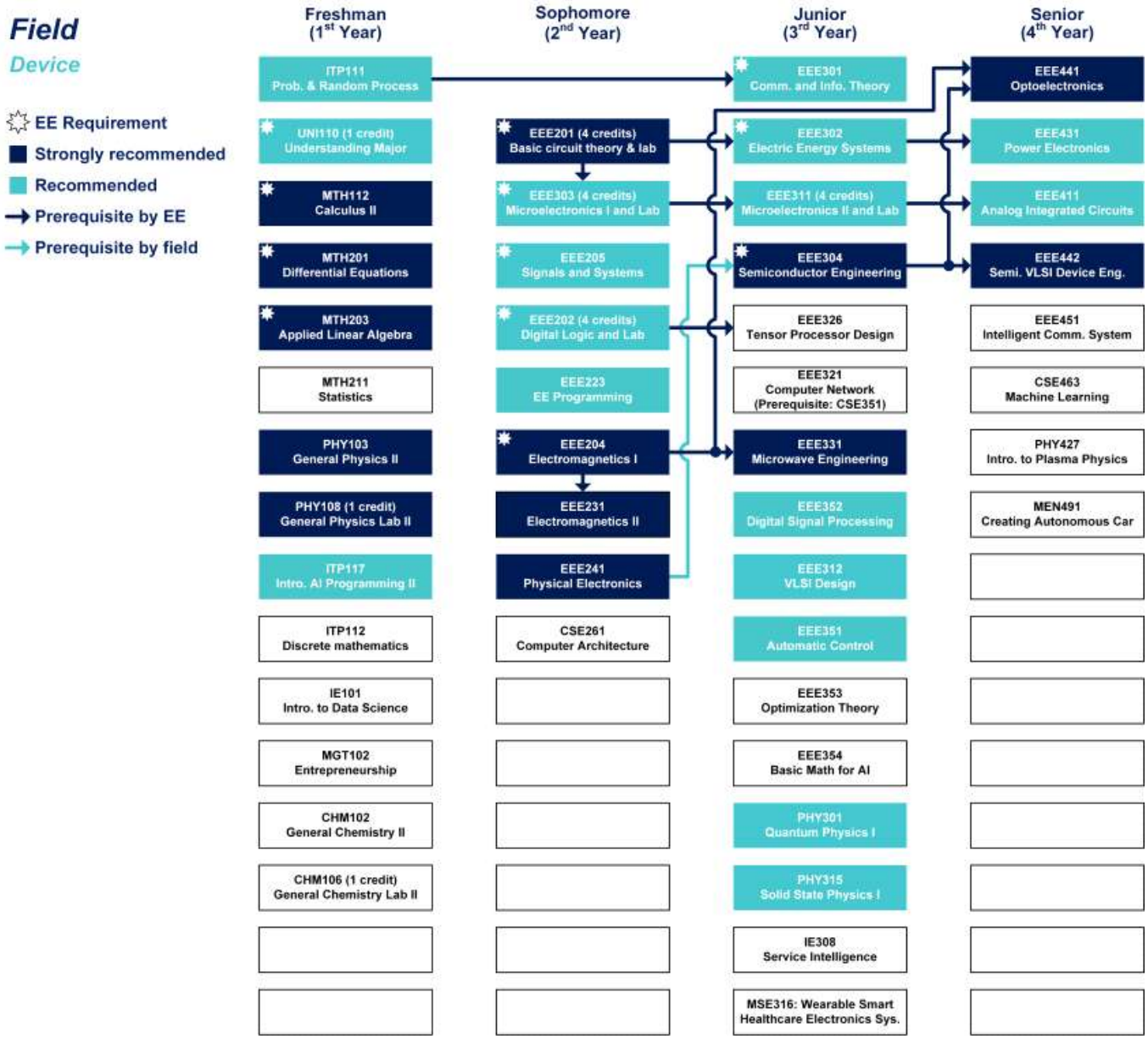
5. Curriculum Map [교육과정 이수 체계도]



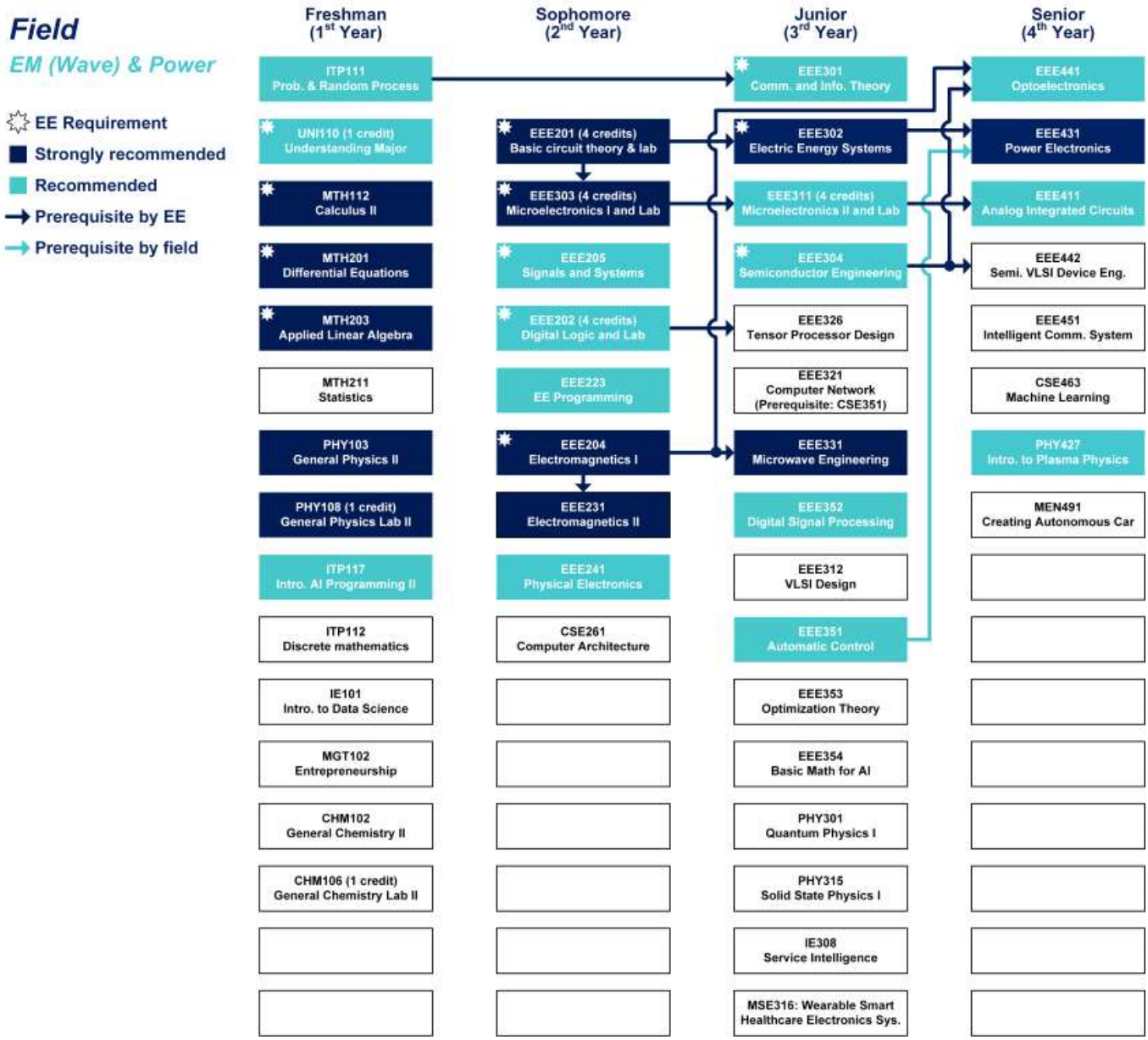

Field
Communication & Signal Processing
EE Requirement
Strongly recommended
Recommended
Prerequisite by EE
Prerequisite by field
Freshman (1st Year)
Sophomore (2nd Year)
Junior (3rd Year)
Senior (4th Year)
ITP111 Prob. & Random Process
UNI110 (1 credit) Understanding Major
MTH112 Calculus II
MTH201 Differential Equations
MTH203 Applied Linear Algebra
MTH211 Statistics
PHY103 General Physics II
PHY108 (1 credit) General Physics Lab II
ITP117 Intro. AI Programming II
ITP112 Discrete mathematics
IE101 Intro. to Data Science
MGT102 Entrepreneurship
CHM102 General Chemistry II
CHM106 (1 credit) General Chemistry Lab II
EEE201 (4 credits) Basic circuit theory & lab
EEE303 (4 credits) Microelectronics I and Lab
EEE205 Signals and Systems
EEE202 (4 credits) Digital Logic and Lab
EEE223 EE Programming
EEE204 Electromagnetics I
EEE231 Electromagnetics II
EEE241 Physical Electronics
CSE261 Computer Architecture
CSE221 Data Structures
CSE331 Introduction to Algorithms
MTH433 Information Theoretical Approach to A.I.
EEE301 Comm. and Info. Theory
EEE302 Electric Energy Systems
EEE311 (4 credits) Microelectronics II and Lab
EEE304 Semiconductor Engineering
EEE326 Tensor Processor Design
EEE321 Computer Network (Prerequisite: CSE351)
EEE331 Microwave Engineering
EEE352 Digital Signal Processing
EEE312 VLSI Design
EEE351 Automatic Control
EEE353 Optimization Theory
EEE354 Basic Math for AI
PHY301 Quantum Physics I
PHY315 Solid State Physics I
IE308 Service Intelligence
MSE316: Wearable Smart Healthcare Electronics Sys.
EEE441 Optoelectronics
EEE431 Power Electronics
EEE411 Analog Integrated Circuits
EEE442 Semi. VLSI Device Eng.
EEE451 Intelligent Comm. System
CSE463 Machine Learning
PHY427 Intro. to Plasma Physics
MEN491 Creating Autonomous Car
CSE311 Operating Systems
CSE411 Introduction to Comilers
CSE459 Introduction to Robotics (Will open if necessary)

Department of Electrical Engineering



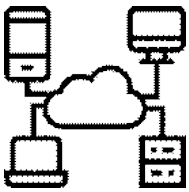

Field
Device
EE Requirement
Strongly recommended
Recommended
Prerequisite by EE
Prerequisite by field
Freshman (1st Year)
Sophomore (2nd Year)
Junior (3rd Year)
Senior (4th Year)
ITP111 Prob. & Random Process
UNI110 (1 credit) Understanding Major
MTH112 Calculus II
MTH201 Differential Equations
MTH203 Applied Linear Algebra
MTH211 Statistics
PHY103 General Physics II
PHY108 (1 credit) General Physics Lab II
ITP117 Intro. AI Programming II
ITP112 Discrete mathematics
IE101 Intro. to Data Science
MGT102 Entrepreneurship
CHM102 General Chemistry II
CHM106 (1 credit) General Chemistry Lab II
EEE201 (4 credits) Basic circuit theory & lab
EEE303 (4 credits) Microelectronics I and Lab
EEE205 Signals and Systems
EEE202 (4 credits) Digital Logic and Lab
EEE223 EE Programming
EEE204 Electromagnetics I
EEE231 Electromagnetics II
EEE241 Physical Electronics
CSE261 Computer Architecture
EEE301 Comm. and Info. Theory
EEE302 Electric Energy Systems
EEE311 (4 credits) Microelectronics II and Lab
EEE304 Semiconductor Engineering
EEE326 Tensor Processor Design
EEE321 Computer Network (Prerequisite: CSE351)
EEE331 Microwave Engineering
EEE352 Digital Signal Processing
EEE312 VLSI Design
EEE351 Automatic Control
EEE353 Optimization Theory
EEE354 Basic Math for AI
PHY301 Quantum Physics I
PHY315 Solid State Physics I
IE308 Service Intelligence
MSE316: Wearable Smart Healthcare Electronics Sys.
EEE441 Optoelectronics
EEE431 Power Electronics
EEE411 Analog Integrated Circuits
EEE442 Semi. VLSI Device Eng.
EEE451 Intelligent Comm. System
CSE463 Machine Learning
PHY427 Intro. to Plasma Physics
MEN491 Creating Autonomous Car

Department of Electrical Engineering



Department of Computer Science and Engineering [컴퓨터공학과]

■ Department Introduction [학과소개]



While most of people are familiar with computers, not many people have a good understanding of what computer science and engineering (CSE) is really about. Implementation of computer programs that improve the quality of human life is an important aspect of computer science and engineering, however learning how to write computer programs is not the core discipline of computer science but just a necessary skill to implement and prove creative and innovative computational logics and ideas in many broad sub-areas of computer science such as algorithms, theoretical computer science, programming languages, operating systems, databases, networks, computer security, computer graphics, artificial intelligence, and many more. In CSE track, students learn foundational principles of the core sub-areas of computer science. Having this curriculum, we cultivate the finest computer scientists and engineers that have the ability of conducting highly creative and innovative research and creating high-quality computing solutions. CSE graduates typically find jobs in IT-related companies or national research institutes or continue to study in graduate schools.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 33 Credits
	Elective 선택[학과 지정]	16	Take 16 credits among the basic course list - Required: 4 courses - Recommended: 2 courses - Elective: 3 courses	
Major 전공	Required 필수	24	Refer to Required course list below	At least 48 Credits
	Elective 선택	24	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		16	All Courses Accepted	At least 16 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

Department of Computer Science and Engineering

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			16 credits	16 credits	16 credits
1	MTH112	Calculus Ⅱ(3)	○	○	○
2	PHY103	General Physics Ⅱ(3)			
3	CHM102	General Chemistry Ⅱ(3)			
4	PHY108	General Physics Lab Ⅱ(1)			
5	CHM106	General Chemistry Lab Ⅱ(1)			
6	MTH201	Differential Equations (3)	○	○	○
7	MTH203	Applied Linear Algebra (3)	●	●	●
8	MTH211	Statistics (3)	◑	◑	◑
9	MGT102	Entrepreneurship (3)			
10	IE101	Introduction to Data Science(3)	○	○	○
11	ITP117	Introduction to AI Programming Ⅱ(3)	●	●	●
12	ITP111	Probability & Random Process (3)	◑	◑	◑
13	ITP112	Discrete Mathematics (3)	●	●	●
14	UNI111	Understanding Major (1) **Introduction to CSE**	●	●	●

●: Required ○: Elective ◑: Recommended, ( ): credits

3. Curriculum [컴퓨터공학과 교육과정]

▶ Credit Requirements for Major/Double Major/Minor [전공/복수전공/부전공 이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Computer Science and Engineering	24	24	**48**	18	21	**39**	15	15	**30**

*R: Required, E: Elective

▶ Credit Requirements for Micro Minor [마이크로전공 이수학점]

Micro Minor	Micro(마이크로전공)			
	R	E	P	Total
Information Security	6	3	–	**9**

*R: Required, E: Elective, P: Project

※ Requirements for Recognition of Micro Minor Completion: A grade of B- or above in each course
(전공이수 인정요건: 각 교과목 성적 B-이상 취득)

▶ Required [전공필수]

Course Code	Course Title	Major 1)	Double 2)	Minor 3)	Micro 4)	Cred. -Lect. -Exp.	Remark	Semester
CSE221	Data Structures 데이터구조	○	○	○		3-3-0		2
CSE241	Advanced Programming 고급 프로그래밍	○	○			3-3-0		1

Course Code	Course Title	Major 1)	Double 2)	Minor 3)	Micro 4)	Cred. -Lect. -Exp.	Remark	Semester
CSE251	System Programming 시스템 프로그래밍	○	○		○	3-3-0		1
CSE261	Computer Architecture 컴퓨터구조	○	△			3-3-0		2
CSE271	Principles of Programming Languages 프로그래밍 언어	○	○	○		3-3-0		2
CSE311	Operating Systems 운영체제	△	△			3-3-0	[PRE] CSE221	1
CSE331	Introduction to Algorithms 알고리즘	○	○	○		3-3-0	[PRE] CSE221	1
CSE351	Computer Networks 컴퓨터네트워크	△	△			3-3-0	[IDEN] EEE321	2
CSE401	Research in Computer Science and Engineering 졸업연구	○				3-3-0		-

1) Major: Take at least 1 course within recommended courses(△) except required courses(O)
2) Double major: Take at least 1 course within recommended courses(△) except required courses(O) (*Excluding CSE401)
3) Minor: Take at least 5 courses including required courses(O) (*Excluding CSE401)
4) Micro Minor: Additional review of Section 3-1. Curriculum for Micro Minor [마이크로전공 교육과정] below is required.

▶ Elective [전공선택]

Course Code	Course Title	Major 1)	Double 2)	Minor 3)	Micro 4)	Cred. -Lect. -Exp.	Remark	Semester
CSE302	Building Customized Computers 맞춤형 컴퓨터 만들기	○	○	○		3-2-2		-
CSE303	Basic Math for AI 인공지능을 위한 기초수학	○	○	○		3-3-0	[IDEN] IE307, EEE354	-
CSE304	Introduction to Data Mining 데이터마이닝 개론	○	○	○		3-3-0	[PRE] CSE221	2
CSE321	Database Systems 데이터베이스 시스템	○	○	○		3-3-0	[PRE] CSE221	1
CSE332	Theory of Computation 계산 이론	○	○	○		3-3-0	[PRE] ITP112	2
CSE333	Introduction to Human Computer Interaction 인간-컴퓨터 상호작용 개론	○	○	○		3-3-0		1
CSE362	Artificial Intelligence 인공지능	○	○	○		3-3-0	[PRE] CSE331, MTH203, MTH112	2
CSE363	Machine Learning 기계학습	○	○	○		3-3-0	[PRE] CSE221, MTH203, MTH112, ITP111	1
CSE364	Software Engineering 소프트웨어공학	○	○	○		3-3-0	[PRE] CSE241	2
CSE365	Deep Learning 딥 러닝	○	○	○		3-3-0		-
CSE402	Natural Language Processing 자연어처리	○	○	○		3-3-0	[PRE] CSE221, ITP111, MTH112, MTH203, MTH201	-

Department of Computer Science and Engineering

Course Code	Course Title	Major 1)	Double 2)	Minor 3)	Micro 4)	Cred. -Lect. -Exp.	Remark	Semester
CSE411	Introduction to Compilers 컴파일러 개론	○	○	○		3-3-0	[PRE] CSE271	2
CSE412	Parallel Computing 병렬 컴퓨팅	○	○	○		3-3-0	[PRE] CSE311	1
CSE465	Mobile Computing 모바일 컴퓨팅	○	○	○		3-3-0	[PRE] CSE351	2
CSE466	Cloud Computing 클라우드 컴퓨팅	○	○	○		3-3-0	[PRE] CSE311	2
CSE467	Computer Security 컴퓨터보안	○	○	○	○	3-3-0	[PRE] CSE261 Required for Micro Minor	1
CSE468	Information Visualization 정보 시각화 기술	○	○	○		3-3-0		2
CSE469	Introduction to Robotics 로보틱스 개론	○	○	○		3-3-0	[PRE] CSE331, MTH203, MTH112	1
CSE471	Computer Graphics 컴퓨터 그래픽스	○	○	○		3-3-0	[PRE] CSE221, CSE331	1
CSE472	Computer Vision 컴퓨터 비전	○	○	○		3-3-0	[PRE] MTH203, ITP111, CSE221	2
CSE480	Special Topic in CSE Ⅰ 컴퓨터 공학 특론 Ⅰ	○	○	○	○	3-3-0	Micro Minor: designated subtitle only (see 3-1.)	-
CSE481	Special Topic in CSE Ⅱ 컴퓨터 공학 특론 Ⅱ	○	○	○		3-3-0		-
CSE482	Special Topic in CSE Ⅲ 컴퓨터 공학 특론 Ⅲ	○	○	○		3-3-0		-
CSE483	Special Topic in CSE Ⅳ 컴퓨터 공학 특론 Ⅳ	○	○	○		3-3-0		-
CSE484	Special Topic in CSE Ⅴ 컴퓨터 공학 특론 Ⅴ	○	○	○		3-3-0		-
UNI204	Software Hacking and Defense 소프트웨어 해킹과 방어	○	○	○		1-1-0		-
EEE202	디지털 로직 및 실험 Digital Logic and Laboratory					4-3-2	Refer to each department section	
EEE205	신호 및 시스템 Signals and Systems					3-3-0		
EEE301	통신 및 정보 이론 Communications and Information Theory					3-3-0		
EEE326	영상 인식을 위한 텐서 프로세서 설계 Tensor Processor Design for Image Recognition					3-3-0		
EEE351	자동제어 Automatic Control					3-3-0		
IE406	기계학습 응용 Applied Machine Learning					3-3-0		
IE421	블록체인 시스템 Blockchain Systems					3-3-0		

Course Code	Course Title	Major 1)	Double 2)	Minor 3)	Micro 4)	Cred. -Lect. -Exp.	Remark	Semester
IE422	사회 연결망 분석 Social Network Analysis					3-3-0		
UNI202	블록체인과 암호화폐 Blockchain and Cryptocurrencies					1-1-0		
MEN472	자율주행 자동차 만들기 Creating Autonomous Car					3-3-0		
MTH204	선형대수학 Linear Algebra					3-3-0		
MTH260	정수론 Elementary Number Theory					3-3-0		
MTH344	수리통계학 Mathematical Statistics					3-3-0		
PHY330	복잡계 네트워크 사이언스개론 Network Science for Complex Systems					3-3-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)
1) Major: Up to 3 courses from other departments can be accepted as elective credits.
2) Double major: Up to 2 courses from other departments can be accepted as elective credits.
3) Minor: Only 1 course from other departments can be accepted as elective credits.
※ If a course from other departments is opened by CSE afterward, you may take only one of the CSE course and other department's course, and the additional course will not be counted as a CSE major elective course.
4) Micro Minor: Additional review of Section 3-1. Curriculum for Micro Minor [마이크로전공 교육과정] below is required.

3-1. Curriculum for Micro Minor [마이크로전공 교육과정]

Category	Course Code	Course Title	Cred.-Lect.-Exp.	Remark	Semester
Required	CSE251	System Programming 시스템 프로그래밍	3-3-0		1
Required	CSE467	Computer Security 컴퓨터보안	3-3-0	[PRE] CSE261	1
Elective	CSE480	Special Topic in CSE Ⅰ (Web Security) 컴퓨터 공학 특론 Ⅰ (웹 보안)	3-3-0		2
Elective	IE470	Special Topics in IE Ⅰ(Introduction to Artificial Intelligence Safety) IE 특론 Ⅰ (인공지능 안전성 개론)	3-3-0		1

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

2025	→	2026
CSE403 Deep Learning 딥 러닝	→	CSE365 Deep Learning 딥 러닝
<New>		Establishment of Information Security Micro Minor Curriculum

Department of Computer Science and Engineering

5. Curriculum Map [교육과정 이수 체계도]

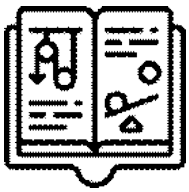
Sophomore		Junior		Senior	
Spring	Fall	Spring	Fall	Spring	Fall
Advanced Programming	Data Structures	Software Engineering	Artificial Intelligence	Parallel Computing	Introduction to Compilers
System Programming	Computer Architecture	Introduction to Algorithms	Computer Networks	Machine Learning	Mobile Computing
	Principles of Programming Languages	Operating Systems	Theory of Computation	Computer Graphics	Cloud Computing
		Introduction to Human Computer Interaction	Database Systems	Computer Security	Information Visualization
				Intelligent Robots	Computer Vision

※ The opening semesters for each courses can be changed depending on the department's circumstances.

College of
Natural Sciences

Department of Physics
[물리학과]

■ Department Introduction [학과소개]



Physics forms a fundamental knowledge system and a framework of 'thinking' for almost every other contemporary science and technology. We incubate the next generation human resources to inherit and lead the diverse researches in modern physics by providing a set of related curriculums. In the physics track of UNIST, we offer not only basic physics courses such as classical mechanics, electromagnetism, quantum physics, statistical physics, mathematical physics and basic laboratory experiments, but also advanced courses for the future research such as solid state physics, optics, computational physics, plasma and beam physics, biological physics, particle physics, cosmology, advanced experiments, etc.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 30 Credits
	Elective 선택[학과 지정]	13	General Physics II(3), General Physics Lab II(1), Calculus II(3), Applied Linear Algebra(3), Differential Equations(3)	
Major 전공	Required 필수	24	Refer to Required course list below	At least 54 Credits
	Elective 선택	30	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		13	All Courses Accepted	At least 13 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			13 credits	13 credits	6 credits
1	MTH112	Calculus Ⅱ(3)	●	●	◑
2	PHY103	General Physics Ⅱ(3)	●	●	●
3	CHM102	General Chemistry Ⅱ(3)			
4	PHY108	General Physics Lab Ⅱ(1)	●	●	●
5	CHM106	General Chemistry Lab Ⅱ(1)			
6	MTH201	Differential Equations (3)	●	●	◑
7	MTH203	Applied Linear Algebra (3)	●	●	◑
8	MTH211	Statistics (3)			
9	MGT102	Entrepreneurship (3)			
10	IE101	Introduction to Data Science(3)			
11	ITP117	Introduction to AI Programming Ⅱ(3)			
12	ITP111	Probability & Random Process (3)			
13	ITP112	Discrete Mathematics (3)			
14	UNI112	Understanding Major **Physics & Innovative Technology**			

●: Required ○: Elective ◑: Recommended, ( ): credits

* For Minor students, It is highly recommended to take Calculus Ⅱ, Diffential Equations, Applied Linear Algebra

* General Physics 1, General Physics Lab 1 must be completed when Business administration field students plan to take Physics as their minor or double major.

3. Curriculum [물리학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Physics	24	30	**54**	18	18	**36**	12	6	**18**

*R: Required, E: Elective

▶ Micro Degree Credit Requirements [마이크로전공 이수학점]

Major	Micro(마이크로전공)			
	R	E	P	Total
Quantum Information	3	3	3	**9**

*R: Required, E: Elective, P: Project

Department of Physics

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Micro	Cred. -Lect.- Exp.	Remark	Semester
PHY201	Classical Mechanics I 고전역학 I	○	○	○		3-3-0	[PRE] PHY101, PHY103	1
PHY203	Electromagnetism I 전자기학 I	○	○	○		3-3-0	[PRE] PHY101, PHY103	1
PHY209	Introduction to Research in Physics 물리학 연구 입문	○	○	○		3-1-4	[PRE] PHY101, PHY103	1
PHY223	Mathematical Physics 수리물리학	○				3-3-0	[PRE] PHY201, PHY203	2
PHY207	Physics Lab I 물리학실험 I	○	○			3-1-4	[PRE] PHY101, PHY103	2
PHY301	Quantum Physics I 양자물리학 I	○	○	○		3-3-0	[PRE] PHY201, PHY203	1
PHY303	Thermal and Statistical Physics I 열 및 통계물리학 I	○	○	○		3-3-0	[PRE] PHY101, PHY103	1
PHY311	Computational Physics 전산물리학	○				3-3-0	[PRE] PHY201, PHY203	1
PHY490	Grauation Thesis 졸업논문	○				0 credit		1,2

※ 복수전공 졸업논문 제외 8과목 중 최소 6과목(18학점)/부전공 졸업논문 제외 8과목 중 최소 4과목(12학점) 이수
Students pursuing a double major should take at least six courses (18 credits) out of eight, excluding Graduation Thesis. Students pursuing a minor should take at least four courses (12 credits) out of eight, excluding Graduation Thesis.

※ 트랙제 학생들의 경우 창의시스템구현과 졸업논문 중 하나를 선택하여 이수

Students following the track-based curriculum may choose either an Interdisciplinary Project or Graduation Thesis.

※[For Major] When students who took PHY213 Modern Physics or PHY213 Fundamentals of Quantum Information retake the course, PHY213 Modern Physics is a substitute from 2025 year. (Application of required course requirement follows student admission year's curriculum.)

※[For Micro Major] When micro major students who took PHY213 Fundamentals of Quantum Information as a required course retake the course, they should take PHY462 Fundamentals of Quantum Information from 2025 year.

※For students admitted in the 2025 academic year, if 'PHY307 Physics Laboratory II: Physics Lab Tour' has not been completed, 'PHY209 Introduction to Research in Physics' will be recognized as a substitute for the required course 'PHY307 Physics Laboratory II: Physics Lab Tour'.

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Micro	Cred. -Lect. -Exp.	Remark	Seme ster
PHY213	Introduction to Quantum Physics 양자물리학 입문	○	○			3-3-0	[PRE] PHY101,PHY 103	1
PHY202	Classical Mechanics Ⅱ 고전역학 Ⅱ	○	○	○		3-3-0	[PRE] PHY201	2
PHY204	Electromagnetism Ⅱ 전자기학 Ⅱ	○	○	○		3-3-0	[PRE] PHY203	2
PHY341	Electronics for Physical Measurements 전자학 및 물리계측	○	○	○		3-1-4		1
PHY302	Quantum Physics Ⅱ 양자물리학 Ⅱ	○	○	○		3-3-0	[PRE] PHY301	2
PHY315	Solid State Physics Ⅰ 고체물리학 Ⅰ	○	○	○		3-3-0	[PRE] PHY301	2
PHY321	Optics 광학	○	○	○		3-3-0	[PRE] PHY203	2
PHY330	Network Science for Complex Systems 복잡계 네트워크 사이언스 개론	○	○	○		3-3-0	[IDEN] BME201	2
PHY320	Fundamentals of Quantum Information 양자정보기초	○	○	○	○	3-3-0	[PRE] PHY101,PHY 103 Required for Micro Major	2
PHY407	Semiconductor Physics 반도체물리학	○	○	○		3-3-0	[IDEN] SSE333	1
PHY427	Introduction to Plasma Physics 플라즈마 물리학 입문	○	○	○		3-3-0	[PRE] PHY203 [IDEN] NE350	1
PHY433	Astrophysics : Stars and Blackholes 천체물리학: 항성과 블랙홀	○	○	○		3-3-0	[PRE] PHY201	1
PHY492	Financial Econo-Physics 금융 경제 물리학	○	○	○		3-3-0	[PRE] PHY223,PHY 303	1
PHY418	Thermal and Statistical Physics Ⅱ : Soft Matter Physics 열 및 통계물리학 Ⅱ: 연성물질물리학	○	○	○		3-3-0	[PRE] PHY303	2
PHY421	Quantum Computing Hardware 양자컴퓨팅하드웨어	○	○	○	○	3-3-0		1
PHY434	Astrophysics : Galaxies and the Universe 천체물리학: 은하와 우주	○	○	○		3-3-0	[PRE] PHY201	2
PHY463	Quantum Mechanics, Quantum Information, and Decoherence 양자역학과 양자정보의 결잃음 동역학	○	○	○	○	3-3-0	[PRE] PHY301	2
PHY431	Quantum Information Project 양자정보 프로젝트	○	○	○	○	3-0-6	Required for Micro Major	1,2
PHY231	Green Hydrogen Production System Based on Plasmonic Photoexcitation 빛을 이용한 청정수소 생산 시스템 설계	○	○	○		3-2-2		-
PHY415	Solid State Physics Ⅱ: Quantum Material 고체물리학 Ⅱ: 양자물성	○	○	○		3-3-0	[PRE] PHY315	-
PHY423	Quantum Optics and Quantum Dynamics 양자광학 및 양자동역학	○	○	○	○	3-3-0	[PRE] PHY301	-
PHY424	Quantum Modeling and Simulation of Light-Matter Interaction 양자 물리계 모델링 및 시뮬레이션	○	○	○	○	3-2-2		-
PHY425	Atomic and Molecular Physics 원자 및 분자물리학	○	○	○		3-3-0	[PRE] PHY301	-

Department of Physics

Course Code	Course Title	Major	Double	Minor	Micro	Cred. -Lect. -Exp.	Remark	Seme ster
PHY428	Introduction to Beam Physics: Principles and Technologies of Particle Accelerators 빔 물리학 입문: 입자가속기의 원리와 기술	○	○	○		3-3-0	[PRE] PHY203	-
PHY429	Nuclear and Elementary Particle Physics 핵 및 입자물리학	○	○	○		3-3-0	[PRE] PHY301,PHY 223	-
PHY435	Biological Physics 생물물리학	○	○	○		3-3-0	[PRE] PHY303	-
PHY437	Nonlinear Dynamics 비선형동역학	○	○	○		3-3-0	[PRE] PHY201	-
PHY439	Introduction to Modern Theoretical Physics 현대이론물리학 입문	○	○	○		3-3-0	[PRE] PHY301,PHY 223	-
PHY441	Fluid Physics 유체물리학	○	○	○		3-3-0	[PRE] PHY201	-
PHY451	Network Science and Machine Intelligence 네트워크과학과 기계지능	○	○	○		3-3-0	[PRE] PHY303	-
PHY461	Challenge to Advanced Topics in Plasma Physics 현대 플라즈마 물리 난제 도전	○	○	○		3-2-2		-
PHY471	Special Topics in Physics I 물리학 특강 I	○	○	○		3-3-0	[PRE] PHY223	-
PHY472	Special Topics in Physics II 물리학 특강 II	○	○	○		3-3-0		-
PHY473	Special Topics in Physics III 물리학 특강 III	○	○	○		3-3-0		-
MEN220	Fluid Mechanics 유체역학	○	○	○		3-3-0	Refer to each department section	
MSE230	Introduction to Crystallography 결정학개론	○	○	○		3-3-0		
MSE407	Semiconductor Device Characteristics and AI Hardware Application 반도체소자 특성과 AI 하드웨어 응용	○	○			3-3-0		
MSE431	Introduction to Spintronics 스핀트로닉스개론	○	○	○		3-3-0		
EEE331	Microwave Engineering 마이크로파공학	○	○	○		3-3-0		
EEE441	Optoelectronics 광전자공학	○	○	○		3-3-0		
CSE363	Machine Learning 기계학습	○	○	○		3-3-0		
BME219	Optical Imaging 광학이미징	○	○	○		3-3-0		
BME321	Biomedical Optics 의광학개론	○	○	○		3-3-0		
BME447	AI-based Neural Data Science AI 기반 뇌과학 데이터 사이언스	○	○			3-3-0		
CHM353	AI-Based Digital Chemistry AI 기반 디지털 화학	○	○			3-3-0		
MTH204	Linear Algebra 선형대수학	○	○	○		3-3-0		
MTH251	Mathematical Analysis I 해석학 I	○	○	○		3-3-0		
MTH271	Methods of Applied Mathematics 응용수학방법론	○	○	○		3-3-0		
MTH313	Complex Analysis I 복소해석학I	○	○	○		3-3-0		
MTH321	Numerical Analysis 수치해석학	○	○	○		3-3-0		
MTH361	Mathematical Modeling and Applications 수리모형방법론	○	○	○		3-3-0		
MTH434	Mathematical Analysis and Computation for	○	○	○		3-2-2		

Course Code	Course Title	Major	Double	Minor	Micro	Cred. -Lect. -Exp.	Remark	Semester
	Machine Learning 머신러닝 해석학 원리와 계산							
MTH450	Deep Learning Methods for Solving Partial Differential Equations 편미분방정식을 계산을 위한 딥러닝 방법	○	○	○		3-3-0		
CUEE354	Disaster Monitoring and Prediction using Artificial Intelligence AI를 활용한 재난재해 모니터링 및 예측	○	○	○		3-3-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

Department of Physics

4. Curriculum Change [교육과정 변경사항]

2025	→	2026
PHY307 Physics Lab II: Physics Lab Tour 물리학 실험 II: 물리학과 실험실 탐방 (전공필수)	→	PHY209 Introduction to Research in Physics 물리학 연구 입문 (전공필수)
PHY213 Modern Physics 현대물리학		PHY213 Introduction to Quantum Physics 양자물리학 입문
PHY462 Fundamentals of Quantum Information 양자정보기초		PHY320 Fundamentals of Quantum Information 양자정보기초
PHY208 Network Science for Complex Systems 복잡계 네트워크 사이언스 개론		PHY330 Network Science for Complex Systems 복잡계 네트워크 사이언스 개론
<NEW>		PHY463 Quantum Mechanics, Quantum Information, and Decoherence 양자역학과 양자정보의 결잃음 동역학 (전공선택)
<NEW>		PHY492 Financial Econo-Physics 금융 경제 물리학 (전공선택)

5. Curriculum for Quantum Information Micro Major [양자정보 마이크로전공 교육과정]

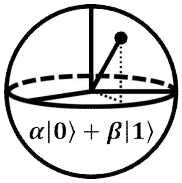
Category	Course Code	Course Title	Cred.-Lect.-Exp.	Remark	Semester
Required	PHY320	Fundamentals of Quantum Information 양자정보기초	3-3-0	[PRE] PHY101,PHY103	2
Required	PHY431	Quantum Information Project 양자정보 프로젝트	3-0-6		1,2
Elective	PHY421	Quantum Computing Hardware 양자컴퓨팅하드웨어	3-3-0		1
Elective	PHY463	Quantum Mechanics, Quantum Information, and Decoherence 양자역학과 양자정보의 결잃음 동역학	3-3-0	[PRE] PHY301	2
Elective	PHY423	Quantum Optics and Quantum Dynamics 양자광학 및 양자동역학	3-3-0	[PRE] PHY301	-
Elective	PHY424	Quantum Modeling and Simulation of Light-Matter Interaction 양자 물리계 모델링 및 시뮬레이션	3-2-2		-

6. Curriculum Map [교육과정 이수 체계도]

Freshmen		Sophomore		Junior		Senior	
Spring	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**
Required Basic Courses	Elective Basic Courses	Classical Mechanics I	Classical Mechanics II	Quantum Physics I	Quantum Physics II	Semiconductor Physics	Thermal and Statistical Physics II
General Physics I	General Physics II	Electro-magnetism I	Electro-magnetismII	Thermal and Statistical Physics I	Solid State Physics I	Introduction to Plasma Physics	Astrophysics :Galaxies and the Universe
General Physics Lab I	General Physics Lab II	Introduction to Research in Physics	Mathematica l Physics	Computational Physics	Optics	Astrophysics :Stars and Blackholes	Quantum Mechanics, Quantum Information, and Decoherence
Calculus I	Calculus II	Introduction to Quantum Physics	Physics Lab I	Electronics for Physical Measurements	Network Science for Complex Systems	Financial Econo-Physics	Quantum Information Project
					Fundamentals of Quantum Information	Quantum Computing Hardware	Graduation Thesis
						Quantum Information Project	

Graduate School of Quantum Science and Technology [양자대학원]

■ Department Introduction [학과소개]



The Graduate School of Quantum Science and Technology (QST) is a highly interdisciplinary graduate program at Ulsan National Institute of Science and Technology (UNIST) aiming at cultivating talented professionals in both fundamental science and practical application aspects of QST. UNIST is widely known to produce world-class research outcomes in the key fields of QST such as quantum computing, quantum communication, quantum sensing, and quantum algorithms. More specifically, the research activities are focused on 1) quantum information theory & experiment, 2) quantum sensing & quatum network, and 3) quantum computing hardware & algorithm. With the aid of state-of-the-art research and educational infrastructures including a quantum nanofabrication facility (Quantum-Nano FAB), UNIST is growing as a leading institution of QST in Korea and also internationally.

1. Micro Degree Requirement [마이크로전공 이수학점]

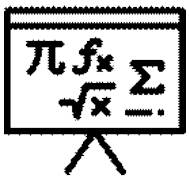
Major	Micro (마이크로전공)			
	R	E	P	Total
Quantum Information 양자정보	3	3	3	9

2. Curriculum [양자정보 마이크로전공 교육과정]

Category	Course Code	Course Title	Cred.-Lect.-Exp.	Remark	Semester
Required	PHY320	Fundamentals of Quantum Information 양자정보기초	3-3-0	[PRE] PHY101,PHY103	2
Required	PHY431	Quantum Information Project 양자정보 프로젝트	3-0-6		1,2
Elective	PHY421	Quantum Computing Hardware 양자컴퓨팅하드웨어	3-3-0		1
Elective	PHY463	Quantum Mechanics, Quantum Information, and Decoherence 양자역학과 양자정보의 결잃음 동역학	3-3-0	[PRE] PHY301	2
Elective	PHY423	Quantum Optics and Quantum Dynamics 양자광학 및 양자동역학	3-3-0	[PRE] PHY301	-
Elective	PHY424	Quantum Modeling and Simulation of Light-Matter Interaction 양자 물리계 모델링 및 시뮬레이션	3-2-2		-

Department of Mathematical Sciences
[수리과학과]

■ Department Introduction [학과소개]



Department of Mathematical Science explores the connections between mathematics and its applications at both the research and educational levels. In addition to focusing on traditional study in pure mathematics, our research at UNIST is devoted to encompass some of the most diverse and interdisciplinary research in the physical, business, economics, engineering, and biological sciences. The department provides a dynamic and engaging research environment in scientific computing, mathematical biology, finance, dynamical systems, image processing, number theory and analysis in PDEs. The undergraduate and graduate curriculum is planned with the following varied objectives: (1) to offer students an introduction to the fundamental study of quantity, structure, space, and change; (2) to prepare students for graduate study in pure or applied mathematics; (3) to serve the needs of students in fields that rely substantially on mathematics, such as the physics, biology, engineering, business and economics.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 30 Credits
	Elective 선택[학과 지정]	13	Complete 13 credits including required courses - Required(10): Calculus Ⅱ(3), Differential Equations (3), Applied Linear Algebra (3), Understanding Major(1), - Elective(3): refer to elective course list in No.2	
Major 전공	Required 필수	30	Refer to Required course list below Graduation thesis required(No credits for thesis)	At least 54 Credits
	Elective 선택	24	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		13	All Course Accepted	At least 13 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

* 학과제 변경자 및 2021년 입학생부터 2025년도 학과 지정 기초학점 요건 및 자유선택 학점 요건을 소급 적용함.

The basic requirement and free elective for Mathematical Science of 2025 year applies to students who change their curriculum to department-based curriculum(학과제) and who entered in 2021 or later retroactively.

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			13 credits	12 credits	12 credits
1	MTH112	Calculus Ⅱ(3)	●	●	●
2	PHY103	General Physics Ⅱ(3)	○	○	○
3	CHM102	General Chemistry Ⅱ(3)	○	○	○
4	PHY108	General Physics Lab Ⅱ(1)			
5	CHM106	General Chemistry Lab Ⅱ(1)			
6	MTH201	Differential Equations (3)	●	●	●
7	MTH203	Applied Linear Algebra (3)	●	●	●
8	MTH211	Statistics (3)	○	○	○
9	MGT102	Entrepreneurship (3)			
10	IE101	Introduction to Data Science(3)	○	○	○
11	ITP117	Introduction to AI Programming Ⅱ(3)	○	○	○
12	ITP111	Probability & Random Process (3)	○	○	○
13	ITP112	Discrete Mathematics (3)	○	○	○
14	UNI113	Understanding Major (1) **Introduction to Modern Mathematics**	●		

●: Required ○: Elective ◑: Recommended, ( ): credits

3. Curriculum [수리과학과 교육과정]

▶ Credit Requirements [이수학점]

Department	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Mathematical Sciences	30	24	54	15	21	36	12	6	18

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remarks	Seme ster
MTH204	Linear Algebra 선형대수학	○	○	○	3-3-0	Recommended MTH201,MTH203	2
MTH251	Mathematical Analysis Ⅰ 해석학 Ⅰ	○	○	○	3-3-0		1
MTH313	Complex Analysis Ⅰ 복소해석학 Ⅰ	○	○	○	3-3-0	Recommended MTH251	1
MTH315	Ordinary Differential Equations 상미분방정식론	○	○	○	3-3-0	Recommended MTH201,MTH203	2
MTH321	Numerical Analysis 수치해석학	○	○	○	3-3-0	Recommended MTH201,MTH203	2
MTH342	Probability 확률론	○	○	○	3-3-0		2
MTH413	Differential Geometry Ⅰ 미분기하학 Ⅰ	○	○	○	3-3-0		1
MTH462	Modern Algebra Ⅰ 현대대수학 Ⅰ	○	○	○	3-3-0	Recommended* MTH230	1

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remarks	Semester
MTH351	General Topology 위상수학	○	○	○	3-3-0	Recommended *MTH230,MTH251	2
MTH421	Introduction to Partial Differential Equations 편미분방정식개론	○	○	○	3-3-0	Recommended MTH201,MTH203, MTH315, MTH251	1
MTH490	Graduation Thesis 졸업논문	○			0 credit		

* It is highly recommended to register the subject related to academic connectivity.
※ If you have taken more than five required courses (15 credits) in the case of a Double major, the excess credits can be replaced with major elective credits. For minor, if you have taken more than four courses (12 credits) required for your major, the excess credits can be replaced with major elective credits.
※If you have taken MTH322, it can substitute required course, MTH321.
※ 복수전공은 전공필수 과목을 5과목(15학점)을 초과하여 수강한 경우, 초과 학점은 전공선택 학점으로 대체 가능. 부전공은 전공필수 과목을 4과목(12학점)을 초과하여 수강한 경우, 초과 학점은 전공선택 학점으로 대체 가능
※ 전공 선택 과목(MTH322)을 수강한 경우, 전공 필수 과목(MTH321)으로 대체 가능

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remarks	Semester
MTH210	Mathematical Foundations of Machine Learning 머신러닝의 수학적 원리	○	○	○	3-3-0		
MTH230	Set Theory 집합론	○	○	○	3-3-0		
MTH252	Mathematical Analysis Ⅱ 해석학 Ⅱ	○	○	○	3-3-0	[PRE] MTH203,MTH251	2
MTH260	Elementary Number Theory 정수론	○	○	○	3-3-0		2
MTH271	Methods of Applied Mathematics 응용수학방법론	○	○	○	3-3-0	Recommended Course: MTH203	
MTH281	Discrete Mathematics 이산수학	○	○	○	3-3-0		
MTH314	Complex Analysis Ⅱ 복소해석학 Ⅱ	○	○	○	3-3-0	[PRE] MTH313, Recommended Course: MTH251, MTH252	
MTH322	Numerical Analysis and Machine Learning 수치해석 및 머신러닝	○	○	○	3-3-0	Recommended MTH201, MTH203	
MTH330	Introduction to Geometry 기하학 개론	○	○	○	3-3-0		
MTH343	Financial Mathematics 금융수학	○	○	○	3-3-0		
MTH344	Mathematical Statistics 수리통계학	○	○	○	3-3-0		1
MTH345	Deep Generative Models: A Statistical Perspective 심층 생성 모델의 통계적 이해	○	○	○	3-3-0		
MTH361	Mathematical Modeling and Applications 수리모형방법론	○	○	○	3-3-0	Recommended MTH201, MTH203	
MTH362	Mathematical Analysis and Modeling for the Industrial Data 수리적 산업데이터 분석 및 모델링	○	○	○	3-3-0		1
MTH401	Real Analysis 실해석학	○	○	○	3-3-0	[PRE] MTH251, MTH351	
MTH403	Probability and Stochastic Processes 확률 및 확률 과정론	○	○	○	3-3-0	[PRE] MTH251, MTH342	
MTH405	Numerical Analysis and Applications 수치해석 및 응용	○	○	○	3-3-0		
MTH411	Numerical Methods for Partial Differential Equations Ⅰ 편미분방정식의 수치방법 Ⅰ	○	○	○	3-3-0		

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remarks	Semester
MTH414	Differential Geometry Ⅱ 미분기하학 Ⅱ	○	○	○	3-3-0	[PRE]MTH413	
MTH422	Partial Differential Equations 편미분방정식	○	○	○	3-3-0		
MTH432	Algebraic Topology 대수적 위상수학	○	○	○	3-3-0	[PRE]MTH112,MTH351 MTH302	2
MTH433	Information Theoretical Approach to A.I. 정보이론과 인공지능	○	○	○	3-3-0	[PRE] MTH251 Recommended Course: MTH342 or MTH403	
MTH434	Mathematical Analysis and Computation for Machine Learning 머신러닝 해석학 원리와 계산	○	○	○	3-2-2		
MTH450	Deep Learning Methods for Solving Partial Differential Equations 편미분방정식 계산을 위한 딥러닝 방법	○	○	○	3-3-0	MTH112, MTH203	
MTH460	Representation Theory and Applications 표현론 및 응용	○	○	○	3-3-0		
MTH461	Stochastic Processes 확률과정론	○	○	○	3-3-0	[PRE] MTH342	
MTH463	Modern Algebra Ⅱ 현대대수학 Ⅱ	○	○	○	3-3-0	[PRE] MTH462	2
MTH480	Topics in Mathematics Ⅰ 수학 특강 Ⅰ	○	○	○	3-3-0		2
MTH481	Topics in Mathematics Ⅱ 수학 특강 Ⅱ	○	○	○	3-3-0		
UNI203	Design and implementation of data-driven machine learning 데이터기반 머신러닝 설계 및 제작	○	○	○	1-1-0		
CSE302	Building Customized Computers 맞춤형 컴퓨터 만들기	○	○	○	3-2-2	Refer to each department section	
CSE332	Theory of Computation 계산 이론	○	○	○	3-3-0		
CSE363	Machine Learning 기계 학습	○	○	○	3-3-0		
CSE331	Introduction to Algorithms 알고리즘	○	○	○	3-3-0		
FIA331	Introduction to Financial Engineering 금융공학개론	○	○	○	3-3-0		
IE201	Operations Research Ⅰ 계량경영학 Ⅰ	○	○	○	3-3-0		
IE308	Service Intelligence 서비스 지능	○	○	○	3-3-0		
IE412	Financial Artificial Intelligence 금융인공지능	○	○	○	3-3-0		
UNI202	Blockchain and Cryptocurrencies 블록체인과 암호화폐	○	○	○	1-1-0		
UNI208	Inventory Management Optimization Strategies 재고관리 최적화 전략	○	○	○	1-1-0		
MEN220	Fluid Mechanics 유체역학	○	○	○	3-3-0		
MEN301	Numerical Analysis 수치해석	○	○	○	3-3-0		
MEN302	Introduction to Finite Element Method 유한요소법개론	○	○	○	3-3-0		

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remarks	Semester
MEN472	Creating Autonomous Car 자율주행 자동차 만들기	○	○	○	3-3-0	Refer to each department section	
PHY201	Classical Mechanics I 고전역학 I	○	○	○	3-3-0		
PHY223	Mathematical Physics 수리물리학	○	○	○	3-3-0		
PHY437	Nonlinear Dynamics 비선형동역학	○	○	○	3-3-0		
PHY451	Network Science and Machine Intelligence 네트워크과학과 기계지능	○	○	○	3-3-0		
PHY461	Challenge to Advanced Topics in Plasma Physics 현대 플라즈마 물리 난제 도전	○	○	○	3-2-2		
UNI207	Creative Computing for Media Art 창의적 컴퓨팅과 미디어아트	○	○	○	1-1-0		
CUEE354	Disaster Monitoring and Prediction using Artificial Intelligence AI를 활용한 재난재해 모니터링 및 예측	○	○	○	3-3-0		
BME447	AI-based Neural Data Science AI 기반 뇌과학 데이터 사이언스	○	○	○	3-3-0		
EEE301	Communications and Information Theory 통신 및 정보 이론	○	○	○	3-3-0		
PHY203	Electromagnetism I 전자기학 I	○	○	○	3-3-0		
PHY213	Introduction to Quantum Physics 양자물리학 입문	○	○	○	3-3-0		
PHY202	Classical Mechanics II 고전역학 II	○	○	○	3-3-0		
PHY204	Electromagnetism II 전자기학 II	○	○	○	3-3-0		
PHY302	Quantum Physics II 양자물리학 II	○	○	○	3-3-0		
PHY311	Computational Physics 전산물리학	○	○	○	3-3-0		
PHY421	Quantum Computing Hardware 양자컴퓨팅하드웨어	○	○	○	3-3-0		
PHY439	Introduction to Modern Theoretical Physics 현대이론물리학 입문	○	○	○	3-3-0		
PHY320	Fundamentals of Quantum Information 양자정보기초	○	○	○	3-3-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

2025	→	2026
MTH412 Dynamical Systems 동적시스템 (전공선택)	→	폐지
BME201 Introduction to Network Biology 네트워크생물학개론 (전공선택)		전공선택 제외
-		CSE332/PHY311/PHY320 계산 이론/전산물리학/양자정보기초 (전공선택) 추가

5. Curriculum Map [교육과정 이수 체계도]

Sophomore		Junior		Senior	
Spring	**Fall**	**Spring**	**Fall**	**Spring**	**Fall**
미분방정식 Differential Equations	**통계학** Statistics	**집합론** Set Theory	**상미분방정식론®** Ordinary Differential Equations	**미분기하학 I®** Differential Geometry I	**확률 및 확률과정론** Probability and Stochastic Processes
응용선형대수 Applied Linear Algebra	**선형대수학®** Linear Algebra	**복소해석학 I®** Complex Analysis I	**수치해석학®** Numerical Analysis	**편미분방정식 개론®** Introduction to Partial Differential Equations	**미분기하학 II** Differential Geometry II
해석학 I® Mathematical Analysis I	**해석학 II** Mathematical Analysis II	**수치해석 및 머신러닝** Numerical Analysis and Machine Learning	**확률론®** Probability	**현대대수학 I** Modern Algebra I	**편미분방정식** Partial Differential Equations
머신러닝의 수학적 원리 Mathematical Foundations of Machine Learning	**응용수학방법론** Methods of Applied Mathematics	**금융수학** Financial Mathematics	**위상수학®** General Topology	**실해석학** Real Analysis	**머신러닝 해석학 원리와 계산** Mathematical Analysis and Computation for Machine Learning
이산수학 Discrete Mathematics		**수리모형방법론** Mathematical Modeling and Applications	**정수론** Elementary Number Theory	**수치해석 및 응용** Numerical Analysis and Applications	**확률과정론** Stochastic Processes
		수리적 산업데이터 분석 및 모델링 Mathematical Analysis and Modeling for the Industrial Data	**복소해석학 II** Complex Analysis II	**대수적 위상수학** Algebraic Topology	**수학특강 II** Topics in Mathematics II
			기하학개론 Introduction to Geometry	**정보이론과 인공지능** Information Theoretical Approach to A.I.	**편미분방정식 계산을 위한 딥러닝 방법** Deep Learning Methods for Solving Partial Differential Equations
				표현론 및 응용 Representation Theory and Applications	**현대대수학 II** Modern Algebra II
				수학특강 I Topics in Mathematics I	**졸업논문®** Graduation Thesis
				수리통계학 Mathematical Statistics	

Department of Chemistry
[화학과]

■ Department Introduction [학과소개]

Chemistry is a central science that seeks the understanding of nature and interactions between atoms and molecules. In addition to this essential scientific question, modern development such as nanoscience offers new chances to explore the world of 'beyondatoms and molecules. The department offers lectures and experimental courses in all fields of chemistry: physical, organic, analytical, biological, and materials/polymers chemistry. The department stresses a research experience as an essential educational tool. Research opportunities with our world-class researchers are provided to all undergraduate students in the state-of-the art facilities and environment.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	17	Calculus I(3), General Physics I(3), General Chemistry I(3), General Biology(3), Introduction to AI Programming I(3), General Chemistry Lab I(1), General Physics Lab I(1) (Total 17 credits)	At least 31 Credits
	Elective 선택[학과 지정]	14	General Chemistry II(3), General Chemistry Lab II(1), Why Chemistry?(1)	
Major 전공	Required 필수	33	Refer to Required course list below Including 3 Credits of Graduation Thesis	At least 57 Credits
	Elective 선택	24	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		9	All courses accepted	At least 9 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

Department of Chemistry

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			14 credits	14 credits	3 credits
1	MTH112	Calculus Ⅱ(3)	◑	◑	
2	PHY103	General Physics Ⅱ(3)	◑	◑	
3	CHM102	General Chemistry Ⅱ(3)	●	●	●
4	PHY108	General Physics Lab Ⅱ(1)	○	○	
5	CHM106	General Chemistry Lab Ⅱ(1)	●	●	
6	MTH201	Differential Equations (3)	○	○	
7	MTH203	Applied Linear Algebra (3)	○	○	
8	MTH211	Statistics (3)	○	○	
9	MGT102	Entrepreneurship (3)	○	○	
10	IE101	Introduction to Data Science(3)	○	○	
11	ITP117	Introduction to AI Programming Ⅱ(3)	◑	◑	
12	ITP111	Probability & Random Process (3)	○	○	
13	ITP112	Discrete Mathematics (3)	○	○	
14	UNI114	Understanding Major **Why Chemistry? (1)**	●	●	

●: Required ○: Elective ◑: Recommended, ( ): credits

* General Chemistry 1, General Chemistry Lab 1 must be completed when Business administration field students plan to take Chemistry as their minor or double major.

3. Curriculum [화학과 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
Department of Chemistry	33	24	**57**	18	18	**36**	12	6	**18**

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred. -Lect. -Exp.	Remark	Seme ster
CHM201	Organic Chemistry Lab 유기화학실험	○			2-0-4		2
CHM211	Organic Chemistry I 유기화학 I	○	○	○	3-3-0	[IDEN] ECHE201	1,2
CHM212	Organic Chemistry II 유기화학 II	○	○	○	3-3-0	[IDEN] ECHE202	1,2
CHM231	Physical Chemistry I 물리화학 I	○	○	○	3-3-0		1
CHM232	Physical Chemistry II 물리화학 II	○	○	○	3-3-0		2
CHM291	Analytical Chemistry I 분석화학 I	○	○		3-3-0	[IDEN] ECHE213	1
CHM301	Inorganic Chemistry Lab 무기화학실험	○			2-0-4		1

Course Code	Course Title	Major	Double	Minor	Cred. -Lect. -Exp.	Remark	Semester
CHM302	Physical Chemistry Lab 물리화학실험	○			2-0-4		2
CHM321	Biochemistry I 생화학 I	○			3-3-0	[IDEN] BIO211	1
CHM351	Inorganic Chemistry I 무기화학 I	○	○		3-3-0		1
CHM352	Inorganic Chemistry II 무기화학 II	○			3-3-0		2
CHM400	Thesis 졸업논문	○			3-0-6		1,2

※ 복수전공 졸업논문 제외 10과목 중 최소 6과목(18학점)/부전공 졸업논문 제외 10과목 중 최소 4과목(12학점) 이수
Students pursuing a double major should take at least six courses (18 credits) out of ten, excluding Graduation Thesis. Students pursuing a minor should take at least four courses (12 credits) out of ten, excluding Graduation Thesis.
※ 2020년 입학생부터 졸업논문 이수, 2020년 이전 입학생은 기존 창의시스템구현 이수
Students entering from 2020 should take Graduation Thesis. Students entered before 2020 should take Interdisciplinary Project.

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred. -Lect. -Exp.	Remark	Semester
CHM222	Medical Chemistry 의화학	○	○		3-3-0	[IDEN] HST209	-
CHM311	Synthetic Organic Chemistry 합성유기화학	○	○	○	3-3-0		1
CHM313	Fundamental of Energy Materials 에너지재료개론	○	○	○	3-3-0	[IDEN] ECHE317	1
CHM322	Biochemistry II 생화학 II	○	○	○	3-3-0		2
CHM323	Medicinal Chemistry 의약화학	○	○	○	3-3-0		-
CHM324	Spectroscopy in Organic Chemistry 유기분광학	○	○	○	3-3-0		2
CHM333	Physical Chemistry III 물리화학 III	○			3-3-0		1
CHM335	Quantum Chemistry 양자화학	○	○	○	3-3-0		1
CHM337	Computational Chemistry 전산화학	○	○	○	3-3-0		-
CHM353	AI-Based Digital Chemistry AI기반 디지털 화학	○	○	○	3-3-0		-
CHM371	Introduction to Nanochemistry 나노화학개론	○	○	○	3-3-0	[IDEN] ECHE416	2
CHM372	Introduction to Polymer Chemistry 고분자화학개론	○	○	○	3-3-0	[IDEN] ECHE351,MSE270	2
CHM381	Frontiers in Chemistry 현대화학동향	○			2-2-0	S/U	1
CHM391	Instrumental Analysis 기기분석	○	○		3-3-0	[IDEN] ECHE322	2
CHM401	Special Topics in Chemistry I 화학특론 I	○			3-3-0		-
CHM402	Special Topics in Chemistry II 화학특론 II	○			3-3-0		-
CHM403	Special Topics in Chemistry III 화학특론 III	○			3-3-0		-

Department of Chemistry

Course Code	Course Title	Major	Double	Minor	Cred. -Lect. -Exp.	Remark	Seme ster
CHM421	Introduction to Chemical Biology 화학생물학개론	○	○		3-3-0		-
CHM422	Introduction to Supramolecular Chemistry 초분자화학개론	○	○		3-3-0		1
CHM423	Synthetic Methods in Organic Chemistry 유기화학 합성방법론	○			3-3-0		
CHM431	Introduction to Molecular Spectroscopy 기초분자분광학	○	○		3-3-0		-
CHM433	Semiconductor Chemistry 반도체화학	○	○		3-3-0		1
CHM451	Inorganic Materials Analysis 무기재료분석	○	○		3-3-0		-
CHM452	Organometallic Chemistry 유기금속화학	○	○		3-3-0		-
CHM453	Bioinorganic Chemistry 생무기화학	○	○		3-3-0		1
CHM454	Solid State Chemistry 고체화학	○	○		3-3-0	[IDEN] ECHE313	1
CHM455	Crystallography 결정학	○	○		3-3-0		-
CHM473	Nanomaterials Chemistry 나노재료화학	○	○		3-3-0		1
CHM474	Advanced Polymer Chemistry 고급고분자화학	○	○		3-3-0		-
CHM475	Electrochemistry 전기화학	○	○		3-3-0		2
CHM480	Becoming a Researcher: Thinking, Building, and Leading in Science 연구자의 길	○			2-2-0	S/U	-
BIO231	The Chemical Basis of Life 생명현상의 화학적 이해	○	○	○	3-3-0	Refer to each department section	
BIO307	Current Topics in Biological Sciences 현대생명과학동향	○	○	○	2-2-0		
ECHE240	Engineering Biochemistry 공학생화학	○	○	○	3-3-0		
ECHE312	Electrochemistry 전기화학	○	○	○	3-3-0		
ECHE413	Introduction to New Energy Conversion and Storage 신에너지 변환 및 저장개론	○	○	○	3-3-0		
ECHE431	Introduction to Catalysis 촉매개론	○	○	○	3-3-0		
PHY201	Classical Mechanics I 고전역학 I	○	○	○	3-3-0		
PHY203	Electromagnetism I 전자기학 I	○	○	○	3-3-0		
PHY204	Electromagnetism II 전자기학 II	○	○	○	3-3-0		
PHY223	Mathematical Physics 수리물리학	○	○	○	3-3-0		
PHY301	Quantum Physics I 양자물리학 I	○	○	○	3-3-0	Refer to each department section	
PHY302	Quantum Physics II 양자물리학 II	○	○	○	3-3-0		
PHY303	Thermal and Statistical Physics I 열 및 통계물리학 I	○	○	○	3-3-0		
PHY311	Computational Physics 전산물리학	○	○	○	3-3-0		

Course Code	Course Title	Major	Double	Minor	Cred. -Lect. -Exp.	Remark	Semester
PHY315	Solid State Physics Ⅰ 고체물리학 Ⅰ	○	○	○	3-3-0		
PHY321	Optics 광학	○	○	○	3-3-0		
PHY415	Solid State Physics Ⅱ : Quantum Material 고체물리학 Ⅱ : 양자물성	○	○	○	3-3-0		
PHY425	Atomic and Molecular Physics 원자 및 분자물리학	○	○	○	3-3-0		
PHY435	Biological Physics 생물물리학	○	○	○	3-3-0		
CUEE211	Environmental Chemistry 환경화학	○	○	○	3-3-0		
UNI203	Design and implementation of data-driven machine learning 데이터기반 머신러닝 설계 및 제작	○	○	○	1-1-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)

4. Curriculum Change [교육과정 변경사항]

2025	→	2026
CHM323 Medicinal Chemistry 의약화학 [PRE] CHM211, CHM212	→	CHM323 Medicinal Chemistry 의약화학
CHM333 Physical Chemistry III 물리화학 III [PRE] CHM231, CHM232		CHM333 Physical Chemistry III 물리화학 III
CHM335 Quantum Chemistry 양자화학 [PRE] CHM232		CHM335 Quantum Chemistry 양자화학
CHM431 Introduction to Molecular Spectroscopy 기초분자분광학 [PRE] CHM232, CHM333		CHM431 Introduction to Molecular Spectroscopy 기초분자분광학
ECHE350 AI-driven Design of Energy Materials and Process 인공지능 기반 에너지 소재 및 공정 설계 (전공선택)		전공선택 제외
CUEE206 Science Humanities 과학인문학 (전공선택)		전공선택 제외
<NEW>		CHM480 Becoming a Researcher: Thinking, Building, and Leading in Science 연구자의 길
<NEW>		CHM222 Medical Chemistry 의화학

5. Curriculum Map [교육과정 이수 체계도]

Course Code	Course Title	Organic Chemistry	Physical Chemistry	Inorganic Chemistry	Materials Chemistry
CHM311	Synthetic Organic Chemistry 합성유기화학	●			
CHM313	Fundamental of Energy Materials 에너지재료개론	●	●	◑	●
CHM322	Biochemistry Ⅱ 생화학 Ⅱ	●			●
CHM323	Medicinal Chemistry 의약화학	●			
CHM324	Spectroscopy in Organic Chemistry 유기분광학	●			
CHM333	Physical Chemistry Ⅲ 물리화학 Ⅲ		●		
CHM335	Quantum Chemistry 양자화학	●	●		
CHM337	Computational Chemistry 전산화학	●	●	◑	●
CHM353	AI-Based Digital Chemistry AI기반 디지털 화학	◑	◑		
CHM371	Introduction to Nanochemistry 나노화학개론		●	◑	●
CHM372	Introduction to Polymer Chemistry 고분자화학개론	●			●
CHM381	Frontiers in Chemistry 현대화학동향	●	●	●	●
CHM391	Instrumental Analysis 기기분석	●	●	●	●
CHM421	Introduction to Chemical Biology 화학생물학개론	◑			
CHM422	Introduction to Supramolecular Chemistry 초분자화학개론	●		●	
CHM431	Introduction to Molecular Spectroscopy 기초분자분광학		●		
CHM433	Semiconductor Chemistry 반도체화학		●		●
CHM451	Inorganic Materials Analysis 무기재료분석			●	●
CHM452	Organometallic Chemistry 유기금속화학	●		●	
CHM453	Bioinorganic Chemistry 생무기화학			●	
CHM454	Solid State Chemistry 고체화학			●	●
CHM455	Crystallography 결정학			●	●
CHM473	Nanomaterials Chemistry 나노재료화학			●	●
CHM474	Advanced Polymer Chemistry 고급고분자화학	◑			◑
CHM475	Electrochemistry 전기화학				●
CHM480	Becoming a Researcher. Thinking, Building, and Leading in Science 연구자의 길	●	●	●	●

Please refer to the previous section for elective courses offered by other departments.
(●: Highly recommended, ◑: Recommended)

School of
Business
Administration

School of Business Administration
[경영과학부]

■ School Introduction [학부소개]

The mission of the UNIST School of Business Administration (SBA) is to educate and develop leaders and enterprise builders, who create new wealth by integrating science & technology with business management. The academic curriculum of the School is specifically tailored to accomplish this mission by offering focus courses in critical-thinking, data analytics, and entrepreneurship as well as a variety of courses in conventional management. Through our rigorous and contemporary curriculum, students will build a strong theoretical foundation and gain the agility to pursue myriad options on the path to becoming influential leaders and business champions, who will create a better world.

The School of Business Administration boasts faculty members who have obtained Ph.D. degrees from prominent institutions. Their courses enable students to acquire expert business knowledge by emphasizing individual, experiential, and team-based learning. Specifically, by offering courses taught in English, students develop the confidence to effectively communicate their ideas in the international language of commerce. With the smallest faculty-student ratio in South Korea, research and education are more personalized, relevant, and forward-thinking, and collaborations between faculty and students are more productive.

Our students can enjoy various benefits, to wit: 1) receive world-class education; 2) participate in research with faculty members; 3) study abroad; 4) sign-up for practice-based or research-based internship programs; 5) receive scholarship for almost all students; and 6) live in dormitory complexes. The School of Business Administration provides a transformational experience, enabling students to realize their full potential.

In 2018, the UNIST SBA received AACSB (Association to Advance Collegiate School of Business) International Accreditation, which means that our programs at the bachelor's, master's, and doctoral levels have proven to be among the top 5 percent in business education worldwide. We hope that all young people who dream of becoming a global leader in the field of research or practice in cutting-edge new industries can join the UNIST SBA to leap together.

1. Graduation Requirement [졸업 이수요건]

Category 구분		Credits 이수학점	Remarks 비고	Subtotal 소계
Basic 기초	Required 필수	9	Required: Calculus I (3), Introduction to AI Programming I (3) Elective: Choose 1 among General Physics I(3), General Chemistry I(3), General Biology(3) (Total 9 credits)	At least 28 Credits
	Elective 선택[학과 지정]	19	Required: Applied Linear Algebra(3), Statistics(3), Entrepreneurship(3), Economics(3), Principles of Management(1) Elective: Calculus Ⅱ(3), Differential Equations(3), Introduction to Data Science(3), AIP Ⅱ(3), Discrete Mathematics(3), Probability&Random Process(3)	
Major 전공	Required 필수	21	Refer to Required course list below	At least 48 Credits
	Elective 선택	27	Refer to Elective course list below	
	Internship 인턴십	3	Internship (Choose one among Research, Industrial, Venture Creation, Co-op)	3 Credits
Free Elective 자유선택		21	All Courses Accepted	At least 21 Credits

* For Liberal Arts and Leadership requirements, refer to school Common requirements

2. Basic Requirements [기초 이수요건]

No.	Course Code	Course Title	Major 전공	Double Major 복수전공	Minor 부전공
			19 credits	10 credits	–
1	MTH112	Calculus Ⅱ(3)	○		
2	PHY103	General Physics Ⅱ(3)			
3	CHM102	General Chemistry Ⅱ(3)			
4	PHY108	General Physics Lab Ⅱ(1)			
5	CHM106	General Chemistry Lab Ⅱ(1)			
6	MTH201	Differential Equations (3)	○		
7	MTH203	Applied Linear Algebra (3)	●		
8	MTH211	Statistics (3)	●	●	
9	MGT103	Entrepreneurship (3)	●	●	
10	IE101	Introduction to Data Science(3)	○		
11	ITP117	Introduction to AI Programming Ⅱ(3)	○		
12	ITP111	Probability & Random Process (3)	○		
13	ITP112	Discrete Mathematics (3)	○		
14	MGT106	Economics(3)	●	●	
15	UNI115	Understanding Major **Principles of Management**	●	●	

●: Required ○: Elective ◑: Recommended, ( ): credits

3. Curriculum [경영과학부 교육과정]

▶ Credit Requirements [이수학점]

Department (School)	Major(전공)			Double Major(복수전공)			Minor(부전공)		
	R	E	Total	R	E	Total	R	E	Total
School of Business Administration	21	27	48	21	15	36	12	6	18

*R: Required, E: Elective

▶ Required [전공필수]

Course Code	Course Title	Major	Double	Minor	Cred –Lect –Exp	Remark	Seme ster
MGT201	Management Information Systems 경영정보론	○	○	○	3–3–0		2
MGT202	Organizational Behavior 조직행동론	○	○	○	3–3–0		1
MGT204	Marketing Management 마케팅관리	○	○	○	3–3–0		1
MGT205	Financial Accounting 재무회계	○	○	○	3–3–0		1
MGT207	Financial Management 재무관리	○	○	○	3–3–0		2
MGT209	Operations Management 생산운영관리	○	○	○	3–3–0		2
MGT499	Strategic Management 경영전략	○	○	○	3–3–0		1

*MGT499 경영전략은 졸업과제로서 주전공, 복수전공은 반드시 이수하여야 함
*Major and double major must complete MGT499 Strategic Management.

School of Business Administration

▶ Elective [전공선택]

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
MGT101	Business Communication & Leadership 비즈니스커뮤니케이션 & 리더십	○	○	○	3-3-0		1
MGT203	International Business 국제경영학	○	○	○	3-3-0		-
MGT206	Managerial Accounting 관리회계	○	○	○	3-3-0	[PRE] MGT205	2
MGT210	Data Analysis & Decision Making 경영통계분석	○	○	○	3-3-0	[PRE] MTH211	1
MGT211	Microeconomics 미시경제학	○	○	○	3-3-0	[PRE] MGT106	2
MGT302	Human Resource Management 인사관리	○	○	○	3-3-0	[PRE] MGT202	2
MGT303	Strategic Human Resource Management 전략적 인적자원 관리	○	○	○	3-3-0		2
MGT306	Business Ethics 기업경영윤리	○	○	○	3-3-0		-
MGT312	Macroeconomics 거시경제학	○	○	○	3-2-2	[PRE] MGT211	1
MGT315	Econometrics 계량경제학	○	○	○	3-3-0	[PRE] MTH211	2
MGT317	International Economics 국제경제학	○	○	○	3-3-0	[PRE] MGT312	2
MGT330	Consumer Behavior 소비자행동	○	○	○	3-3-0	[PRE] MGT204	-
MGT331	International Marketing 국제마케팅	○	○	○	3-3-0	[PRE] MGT204	2
MGT332	Brand Management 브랜드관리론	○	○	○	3-3-0	[PRE] MGT204	-
MGT361	Technology Management 기술경영	○	○	○	3-3-0		-
MGT363	Operations Research 계량경영학	○	○	○	3-3-0		2
MGT367	Business Data Science 비즈니스 데이터 사이언스	○	○	○	3-3-0	[PRE] MTH211	1
MGT372	Internet Business and Marketing 인터넷 비즈니스	○	○	○	3-3-0		-
MGT380	Supply Chain Management 공급망관리	○	○	○	3-3-0		-
MGT410	Special Topics in MGT Ⅰ 경영과학특론Ⅰ	○	○	○	1-1-0		-
MGT411	Special Topics in MGT Ⅱ 경영과학특론Ⅱ	○	○	○	2-2-0		-
MGT412	Special Topics in MGT Ⅲ 경영과학특론Ⅲ	○	○	○	3-3-0		-
MGT414	Special Topics in MGT Ⅳ 경영과학특론Ⅳ	○	○	○	3-3-0		-

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Seme ster
MGT415	Special Topics in MGT V 경영과학특론 V	○	○	○	3-3-0		-
MGT432	Marketing Research 마케팅조사론	○	○	○	3-3-0	[PRE] MTH211	1
MGT433	Advertising Management 광고관리론	○	○	○	3-3-0	[PRE] MGT204	-
MGT436	Digital Marketing 디지털 마케팅	○	○	○	3-3-0	[PRE] MGT204	2
MGT466	Business AI 비즈니스 AI	○	○	○	3-3-0	[PRE] MTH211, MGT367	2
MGT471	Managing Innovation and Change 혁신과 변화의 관리	○	○	○	3-3-0		1
MGT473	Entrepreneurship and Venture Management 창업과 벤처	○	○	○	3-3-0		-
MGT475	Analyzing Innovation Strategy Using Technology Data 기술데이터를 활용한 혁신전략 분석	○	○	○	3-2-2	[PRE] MTH211 ITP107	
MGT491	Independent Study 개별연구	○	○	○	3-3-0		-
FIA301	Investments 투자론	○	○	○	3-3-0	[PRE] MTH211	2
FIA303	Futures and Option 선물과 옵션	○	○	○	3-3-0	[PRE] MGT207	1
FIA304	International Finance 국제재무관리	○	○	○	3-3-0	[PRE] MGT207	-
FIA305	Corporate Finance 기업재무론	○	○	○	3-3-0	[PRE] MGT207	1
FIA321	Intermediate Accounting 1 중급회계1	○	○	○	3-3-0	[PRE] MGT205	1
FIA331	Introduction to Financial Engineering 금융공학개론	○	○	○	3-3-0	[PRE] MGT207	2
FIA332	Quantitative Finance 계량재무론	○	○	○	3-3-0	[PRE] MGT207	1
FIA402	Fixed Income Securities 채권투자	○	○	○	3-3-0	[PRE] MGT207	1
FIA404	Risk Management 리스크관리	○	○	○	3-3-0	[PRE] MGT207	2
FIA417	Financial Markets 증권시장론	○	○	○	3-3-0	[PRE] MGT207	2
FIA418	Venture Finance 벤처파이낸스	○	○	○	3-3-0	[PRE] MGT207	-
FIA419	Valuing Large Scale Investments(LSI) 대규모 프로젝트의 가치평가 및 시뮬레이션	○	○	○	3-3-0		2
FIA431	Financial Time-series Analysis 금융시계열 분석	○	○	○	3-3-0	[PRE] MTH211	2
FIA432	Business Lab for Financial Engineering 금융공학 비즈니스랩	○	○	○	3-3-0		2

School of Business Administration

Course Code	Course Title	Major	Double	Minor	Cred -Lect -Exp	Remark	Semester
FIA441	Financial Statement Analysis 재무제표분석	○	○	○	3-3-0	[PRE] MGT205	2
FIA443	Cost Accounting 원가관리전략	○	○	○	3-3-0	[PRE] MGT206	-
FIA450	Data Science for finance 금융빅데이터 분석	○	○	○	3-3-0		2
FIA451	Financial Market Analysis using AI 인공지능을 활용한 금융시장 분석	○	○	○	3-3-0		1
IE201	Operations Reserach I 계량경영학 I	○	○	○	3-3-0	Refer to each department section	
MEN456	Artificial Intelligence Based Digital Manufacturing AI 기반 디지털 제조 공학	○			3-3-0		
MEN472	Creating Autonomous Car 자율주행 자동차 만들기	○			3-3-0		
PHY451	Network Science and Machine Intelligence 네트워크과학과 기계지능	○			3-3-0		
UNI207	Creative Computing for Media Art 창의적 컴퓨팅과 미디어아트	○			1-1-0		
BME437	AI-based Affective Engineering AI 기반 감성공학	○			3-3-0		
BME447	AI-based Neural Data Science AI 기반 뇌과학 데이터 사이언스	○			3-3-0		

*[PRE]: Prerequisite(선이수), [IDEN]: Identical(동일지정교과)
*AI연계 교과목·POL교과목·One-day Lecture 교과목으로 이수한 학점은 주전공에 한하여 최대 9학점까지 전공선택 학점으로 인정함

5. Curriculum Map [교육과정 이수 체계도]

Sophomore 1st Semester	Sophomore 2nd Semester	Junior 1st Semester	Junior 2nd Semester	Senior 1st Semester	Senior 2nd Semester
경영통계분석 (Data Analysis & Decision Making)	경영정보론 (Management Information Systems)	비즈니스데이터 사이언스 (Business Data Science)	비즈니스AI (Business AI)		금융공학 비즈니스랩 (Business Lab for Financial Engineering)
조직행동론 (Organizational Behavior)		혁신과 변화의 관리 (Managing Innovation and Change)	인사관리 (Human Resource Management)	경영전략 (Strategic Management)	경영과학특론 (Special Topics in MGT)
비즈니스커뮤니케이션&리더십 (Business Communication & Leadership)				**기술데이터를 활용한 혁신전략 분석* (Analyzing Innovation Strategy Using Technology Data)**	
마케팅관리 (Marketing Management)		마케팅조사론 (Marketing Research)	국제마케팅 (International Marketing)		디지털 마케팅 (Digital marketing)
	생산운영관리 (Operations Management)	공급망관리 (Supply Chain Management)			
	계량경영학 (Operations Research)				
미시경제학 (Microeconomics)		거시경제학 (Macroeconomics)	국제경제학 (International Economics)		
			계량경제학 (Econometrics)		
재무회계 (Financial Accounting)	관리회계(Managerial Accounting)	중급회계(Intermediate Accounting 1)	재무제표분석 (Financial Statement Analysis)		
	재무관리 (Financial Management)	선물과 옵션 (Futures and Option)	금융공학개론 (Introduction to Financial Engineering)	**금융시계열 분석 (Financial Time-series Analysis)**	**증권시장론 (Financial Markets)**
	투자론 (Investments)	계량재무론 (Quantitative Finance)		채권투자 (Fixed Income Securities)	리스크 관리 (Risk Management)
					인공지능을 활용한 금융시장 분석* (Financial Market Analysis using AI)

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