

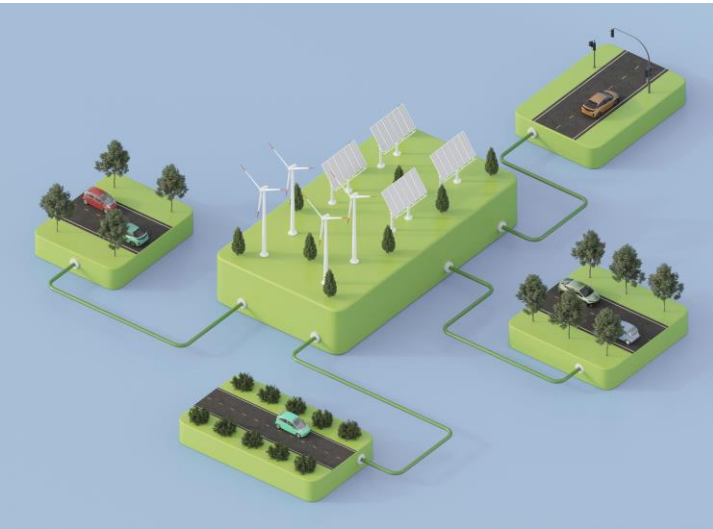
College of Knowledge-based Services Engineering
Department of Environment &
Energy Engineering
at Sungshin Women's University





Department Introduction

To cultivate experts who can lead in the fields of sustainability, environmental management, resource and energy cycles, international environmental regulations, clean production technology, and a culture of clean consumption, by integratively learning climate change, proper conservation and use of environment, energy, and resources, sustainable production and consumption, as well as the diagnosis/evaluation/improvement of environmental friendliness.



Educational Goals

1. Training Eco-friendly Integrated Science and Technology Professionals for Resource and Energy Cycles.
2. Developing Talent in Response to Global Societal and Corporate Needs.
3. Conducting Research on Promising Emerging Technologies of the Future (Energy, Environment, Nanotechnology, etc.).
4. Activation and Qualitative Enhancement of Convergent Research.

Desired Student Model

Professionals with Expertise in Future Convergent Science and Technology Demanded by Society, Possessing Creative Abilities.



Professors



Hong Hyunseon, PhD

Field	Materials Science and Engineering
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Yang Inmog, PhD

Field	Environmental management, Life cycle assessment, Climate change & GHGs management
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Field	Photocatalysis & Electrocatalysis, Water Treatment, Energy Production
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Lee Sehyun, PhD

Field	Synthesis of materials, Fuel cells, Electrolysis, Solar cells
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Han Hyeukjin, PhD

Field	Nanofabrication, Sensor and Electronics application
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Choi Changhoon, PhD

Field	Material science & engineering, Nano & functional materials, Next-generation rechargeable batteries
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Curriculum

Freshman >>>

Department	Completion Type	Course Title (Course Code)	Schedule	Semester	Credit	Remarks
Department of Environment & Energy Engineering	Primary	General Chemistry Laboratory 1 (LE000200)	Annual	First	2	
Department of Environment & Energy Engineering	Primary	Introduction to convergence of Environment, Energy and Materials (LE000300)	Annual	Second	3	
Department of Environment & Energy Engineering	Primary	General Chemistry Laboratory 2 (LE000400)	Annual	Second	2	
Department of Environment & Energy Engineering	Primary	Introduction to Interdisciplinary ECO Engineering (LE000500)	Annual	First	1	
Department of Environment & Energy Engineering	Primary	Introduction to Convergency Science (LE003600)	Annual	First	3	



Curriculum

Sophomore >>>

Department	Completion Type	Course Title (Course Code)	Schedule	Semester	Credit	Remarks
Department of Environment & Energy Engineering	Primary	Physical Properties of Materials (LE000100)	Annual	First	3	
Department of Environment & Energy Engineering	Primary	Introduction to Renewable Energy Engineering (LE000700)	Annual	Second	3	
Department of Environment & Energy Engineering	Primary	Materials Science & Engineering 2 (LE000800)	Annual	Second	3	
Department of Environment & Energy Engineering	Primary	Introduction to Crystallography (LE000900)	Annual	First	3	
Department of Environment & Energy Engineering	Primary	Materials Science & Engineering 1 (LE001100)	Annual	First	3	
Department of Environment & Energy Engineering	Primary	Life cycle thinking & Green product development (LE001200)	Annual	Second	3	
Department of Environment & Energy Engineering	Primary	Thermodynamics (LE001400)	Annual	First	3	



Curriculum

Sophomore >>>

Department	Completion Type	Course Title (Course Code)	Schedule	Semester	Credit	Remarks
Department of Environment & Energy Engineering	Primary	Environment & Sustainability (LE002300)	Annual	First	3	
Department of Environment & Energy Engineering	Primary	Solid State Chemistry (LE002600)	Annual	Second	3	
Department of Environment & Energy Engineering	Primary	Modern Physics (LE003500)	Annual	First	3	
Department of Environment & Energy Engineering	Primary	Electrical and Magnetic Properties of Materials (LE003800)	Annual	Second	3	



Curriculum

Junior >>>

Department	Completion Type	Course Title (Course Code)	Schedule	Semester	Credit	Remarks
Department of Environment & Energy Engineering	Advanced	Capstone Design 1 (LE001000)	Annual	First	2	
Department of Environment & Energy Engineering	Advanced	Capstone Design 2 (LE001300)	Annual	Second	2	
Department of Environment & Energy Engineering	Advanced	Phase equilibrium & Transformation (LE001500)	Annual	Second	3	
Department of Environment & Energy Engineering	Advanced	International regulations for Environment (LE001600)	Annual	First	3	
Department of Environment & Energy Engineering	Advanced	Electrochemistry (LE001700)	Annual	First	3	
Department of Environment & Energy Engineering	Advanced	Energy Materials Engineering (LE001800)	Annual	Second	3	
Department of Environment & Energy Engineering	Advanced	Interdisciplinary ECO Engineering Laboratory 1 (LE001900)	Annual	First	2	
Department of Environment & Energy Engineering	Advanced	Nanomaterials and Nanofabrication Technology (LE002000)	Annual	First	3	



Curriculum

Junior >>>

Department	Completion Type	Course Title (Course Code)	Schedule	Semester	Credit	Remarks
Department of Environment & Energy Engineering	Advanced	Catalysis Engineering (LE002100)	Annual	Second	3	
Department of Environment & Energy Engineering	Advanced	Climate change & Greenhouse gas Management (LE002200)	Annual	Second	3	
Department of Environment & Energy Engineering	Advanced	Interdisciplinary ECO Engineering Laboratory 2 (LE002400)	Annual	Second	2	
Department of Environment & Energy Engineering	Advanced	Resource Management (LE002800)	Annual	First	3	
Department of Environment & Energy Engineering	Advanced	Metallic Material Science and Engineering (LE003700)	Annual	First	3	



Curriculum

Senior >>>

Department	Completion Type	Course Title (Course Code)	Schedule	Semester	Credit	Remarks
Department of Environment & Energy Engineering	Advanced	Materials Processing (LE002700)	Annual	First	3	
Department of Environment & Energy Engineering	Advanced	Instrumental Analysis (LE002900)	Annual	Second	3	
Department of Environment & Energy Engineering	Advanced	Semiconductor Materials and Processing (LE003000)	Annual	Second	3	
Department of Environment & Energy Engineering	Advanced	Green finance & ESG assessment engineering (LE003100)	Annual	Second	3	
Department of Environment & Energy Engineering	Advanced	Research Methodologies and Technical Writing (LE003200)	Annual	First	2	
Department of Environment & Energy Engineering	Advanced	Polymer Materials (LE003300)	Annual	First	3	
Department of Environment & Energy Engineering	Advanced	Ceramic Materials (LE003400)	Annual	Second	3	





Required General Education

Department	Completion Type	Course Title (Course Code)	Schedule	Semester	Credit	Remarks
School of Creativity and Convergence Studies	Core	Critical Thinking and Discussion (SA011100)	Annual	First	3	
School of Creativity and Convergence Studies	Core	Creative thinking and writing (SA011200)	Annual	Second	3	
College of Knowledge-Based Services Engineering	Core	Python Programming for Scientists (SA046600)	Annual	Second	3	
School of Mathematics, Statistics and Data Science	Core	Introduction to Calculus and Vector Analysis (SA045900)	Annual	First	3	
School of Mathematics, Statistics and Data Science	Core	Advanced Mathematics for Natural Sciences (SA046000)	Annual	Second	3	



Required General Education

Department	Completion Type	Course Title (Course Code)	Schedule	Semester	Credit	Remarks
School of Chemistry and Energy	Distribution	General Chemistry I (SB030300)	Annual	First	3	
School of Chemistry and Energy	Distribution	General Chemistry II (SB030400)	Annual	Second	3	
Department of Biotechnology	Distribution	General Biology I (SB030500)	Annual	First	3	General Biology I or General Physics I
Department of Biotechnology	Distribution	General Biology II (SB030600)	Annual	Second	3	General Biology II or General Physics II
School of Chemistry and Energy	Distribution	General Physics I (SB030700)	Annual	First	3	General Biology I or General Physics I
School of Chemistry and Energy	Distribution	General Physics II (SB030800)	Annual	Second	3	General Biology II or General Physics II

Advanced Materials Track



Track Description

Training Future-oriented Professionals by Integrating Energy and Environmental Fields with a Focus on Advanced Materials.

Related Major Competencies

Specialization in Advanced Material Integration, Professional Practical Skills

Specialized Career Paths

National and private universities, government-funded research institutes, Public Institution, Large and small to medium-sized enterprises (in the fields of resources and advanced materials)

Curriculum

Section	Semester	Course Title	Credit
1	1	General Chemistry Laboratory 1	2
2	1	Materials Science & Engineering 1	3
2	2	Materials Science & Engineering 2	3
2	1	Thermodynamics	3
3	2	Energy Materials Engineering	3
3	2	Interdisciplinary ECO Engineering Laboratory 2	2
3	1	Resource Management	3
4	1	Materials Processing	3
3	1	Capstone Design 1	2
3	2	Capstone Design 1	2



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