성균관대학교 공학교육인증(ABEEK)

ABEEK: Accreditation Board for Engineering Education of Korea

ABEEK Program Concept

▶ **The engineering education programs accredited by Washington Accord member**
(mutual recognition of substantial equivalency; global mobility)

▶ **Washington Accord**
  – multinational agreement signed by Australia, Canada, Ireland, New Zealand, United Kingdom, and United States in 1989.

▶ **Washington Accord members**
  – Signatory members
    Australia, Canada, Ireland, New Zealand, United Kingdom, and United States(1989)
    Korea(2007), Hong Kong China(1995), Japan(2005), Singapore(2006), South Africa[1999], Chinese Taipei[2007], Malaysia[2009], Turkey[2011], Russia[2012], Sir Lanka[2014], India[2014], China[2015], Pakistan[2016], Peru[2019]
  – Provisional member
    Mexico, Costa Rica, Philippines, Bangladesh, Chile, Myanmar, Thailand, Indonesian

▶ **ABEEK, Korea(1999) and EAC**

Characteristic of ABEEK Program

▶ **Institutions/Programs/Individuals : Programs Accreditation**

▶ **1 department, 2 programs, distinction of degree**

  – **1 Department**
   : School of Information and Communication Engineering

  – **2 programs**
   : Accredited Program / General Program

  – **Degree**
   : B.S in [major] Engineering / B.S in engineering

▶ **Difference between standard of accredited program and standard of graduation**

▶ **Cross-boarder mobility of the graduate employment opportunities/ next stage of education abroad**

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Bachelor's degree

Department	Accredited Program	General Program
화 학 공 학 / 고 분 자 공 학 부 (Chemical Engineering)	공학사 (화학공학심화) (BS in Chemical Engineering)	공학사 (BS in Engineering)
신 소 재 공 학 부 (Advanced Materials Science and Engineering)	공학사(신소재공학심화) (BS in Advanced Materials Science and Engineering)	공학사 (BS in Engineering)
기 계 공 학 부 (Mechanical Engineering)	공학사(기계공학심화) (BS in Mechanical Engineering)	공학사 (BS in Engineering)
건설환경공학부 (Civil, Architectural Engineering and Landscape Architecture)	공학사(건축공학심화) (BS in Architectural Engineering)	공학사 (BS in Engineering)
	공학사(토목공학심화) (BS in Civil Engineering)	공학사 (BS in Engineering)
시 스 템 경 영 공 학 과 (Systems Management Engineering)	공학사(시스템경영공학심화) (BS in Systems Management Engineering)	공학사 (BS in Engineering)
전자전기공학부 (Electronic and Electronical Engineering)	공학사(전자전기공학심화) (BS in Electronic and Electrical Engineering)	공학사 (BS in Engineering)
컴퓨터공학과 (Computer Science Engineering)	공학사(컴퓨터공학심화) (BS in Computer Engineering)	공학사 (BS in Engineering)

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Certificate of Graduation

< Sample: Accredited Program >

< Sample: General Program>

Standard of accredited program

► If you want to graduate from our university accredited program you must satisfy the standard of accredited program and standard of graduation

► Standard of accredited program

1) Curriculum

Section	Standard of accredited program
Liberal Arts	Abeek subjects **over 24 credits**
Math. Science. Computer	Abeek subjects **over 30 credits**
Major	Abeek subjects **over 60 credits**
Abeek required subject	Abeek required subject
Design Credit	Design subjects **over 12 credits (Creative Engineering Design)**

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Standard of accredited program

▶ Standard of accredited program

2) You must take a course in accordance with RoadMap of curriculum

3) You must register for classes according to Program Structure

ABEEK for Program achievements

1 Mathematics, basic science, and the ability to apply engineering knowledge and information technology (IT) to solve engineering problems

2 Ability to analyze data and to verify given fact or hypothesis by experience

3 Ability to define and formulate engineering problems

4 Up-to-date information to solve engineering problems, research result, and ability to use the right tool

5 Considering realistic constraint system, the ability to design such as element and process

6 Ability to contribute to the team performance as a member of the project team who can solve engineering problem

7 Ability to communication effectively in various environments

8 Engineering solutions is the ability to understand the impact of health, safety, economy, environment, sustainability, etc.

9 Ability to understand professional ethics and social responsibility as engineer

10 Recognizes the need for self-development of the technological environment changes and the ability to continue and self-directed learning

Liberal Arts

⊙| Standard of accredited program

Section	Required credit
Core Liberal Arts	15 credits
Balance Liberal Arts	9 credits
Total Credits	**24 credits**

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MSC(Math. Science. Computer)

◯| Math

Course Title	credit	College of Engineering						College of Information and Communication Engineering College of Software	
		Chemical Engineering	Advanced Materials Science and Engineering	Mechanical Engineering	Architectural Engineering	Civil Engineering	Systems Management Engineering	Electronic and Electrical Engineering	Computer Science Engineering
(Honor)Calculus1	3	required	required	required	required	required	required	required	required
(Honor)Calculus2	3	required	required	required	required	required	required	required	required
Calculus Laboratory1	1	optional	optional	optional	optional	optional	optional	optional	optional
Calculus Laboratory2	1	optional	optional	optional	optional	optional	optional	optional	optional
Linear Algebra	3	optional	optional	optional	optional	optional	optional	optional	required
Discrete athematics	3	optional	optional	optional	optional	optional	optional	optional	required
Probability and Statistics	3	optional	optional	optional	optional	optional	-	optional	optional
Big Data and Statistics	3	optional	optional	optional	optional	optional	optional	optional	optional
Fundamental Mathematics in Engineering1	3	required	required	required	required	required	required	required	required
Fundamental Mathematics in Engineering2	3	required	required	required	required	required	required	required	optional

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MSC(Math. Science. Computer)

Science and Computer

Course Title	credit	College of Engineering						College of Information and Communication Engineering College of Software	
		Chemical Engineering	Advanced Materials Science and Engineering	Mechanical Engineering	Architectural Engineering	Civil Engineering	Systems Management Engineering	Electronic and Electrical Engineering	Computer Science Engineering
(Advanced)General Physics 1	3	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1
(Advanced)General Physics 2	3								
(Advanced)General Chemistry 1	3	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1
(Advanced)General Chemistry 2	3								
General Physics Laboratory 1	1	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1	required choose 1
General Physics Laboratory 2	1								
General Chemistry Laboratory 1	1								
General Chemistry Laboratory 2	1								
(Advanced)Biological science 1	3	optional	optional	optional	optional	optional	optional	optional	optional
(Advanced)Biological science 2	3	optional	optional	optional	optional	optional	optional	optional	optional
Biological science laboratory 1	1	optional	optional	optional	optional	optional	optional	optional	optional
Biological science laboratory 2	1	optional	optional	optional	optional	optional	optional	optional	optional
Computer Programming for Engineers	3	required	required	required	required	required	required	required	required
Basis and Practice in Programming	3	required	required	required	required	required	required	required	required

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Abeek Required Subject of Major

Department	Program	Class Code	Course Title	Section	Credit
Civil, Architecture Engineering and Landscape Architecture	Architectural Engineering	GEDT017	Creative and Interdisciplinary Design	Liberar Arts	3
		CAL2001	Fundamentals of Environmental Engineering and Science	Core	3
		CAL2006	Construction Project Management	Core	3
		CAL2007	Building Environmental Engineering I	Core	3
		CAL2069	Building Systems 1	Core	3
		CAL3012	Cost Estimation for Building Construction	Core	3
		CAL3035	Advanced Information Technology in the Construction Industry	Core	3
		CAL3003	Laboratory Tests of Constrution Materials	Practical	3
		CAL3089	Architectural Engineering Capston Design	Practical	4
Civil, Architecture Engineering and Landscape Architecture	Civil Engineering * Choose 1	GEDT017	Creative and Interdisciplinary Design	Liberar Arts	3
		CAL2001	Fundamentals of Environmental Engineering and Science	Core	3
		CAL2015	Introduction to Environmental Engineering	Core	3
		CAL2016	Elementary Fluid Mechanics	Core	3
		CAL2018	Soil Mechanics and Laboratory	Core	3
		CAL2020	Surveying and Practice	Practical	3
		CAL2022	Introduction to Smart City Infrastructures	Core	3
		CAL3086	Remote Sensing of Global Environment	Practical	3
		ERC2009	Interdisciplinary Capstone Design*	General	3
		CAL3090	Infrastructure Capstone Design*	Practical	3

Abeek Required Subject of Major

Department	Program	Class Code	Course Title	Section	Credit
Mechanical Engineering	Mechanical Engineering * Choose 1	GEDT017	Creative and Interdisciplinary Design	Liberar Arts	3
		EME2006	Computer Aided Drawing	Practical	1
		EME2007	Engineering Thermodynamics	Core	3
		EME2008	Fluid Mechanics	Core	3
		EME2009	Dynamics	Core	3
		EME2012	Solid Mechanics	Core	3
		EME3055	Design Lab on Solid Mechanics	Practical	3
		EME3056	Design Lab on Thermo-Fluidics	Practical	3
		EME3057	Design Lab on Vibration and Dynamic Systems	Practical	3
		EME3058	Senior Capstone Design*	Practical	3
		ERC2009	Creative Engineering Design*	Practical	3
Advanced Materials Science and Engineering	Advanced Materials Science and Engineering	GEDT017	Creative and Interdisciplinary Design	Liberar Arts	3
		EAM2039	Modern Physics	Core	3
		EAM2042	Thermodynamics I	Core	3
		EAM2047	Crystal structure and X-ray diffraction	Core	3
		EAM2057	Introduction to Advanced Materials Engineering 1	Core	3
		EAM2058	Introduction to Advanced Materials Engineering 2	Core	3
		EAM3002	Mechanical Properties of Advanced Materials	Core	3
		EAM3003	Phase Transformation	Core	3
		EAM3078	Advanced Materials Design(Capstone Design)	Core	3

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Abeek Required Subject of Major

Department	Program	Class Code	Course Title	Section	Credit
Systems Management Engineering	Systems Management Engineering	GEDT017	Creative and Interdisciplinary Design	Liberar Arts	3
		ESM2001	Operations Research and Practice I	Core	3
		ESM2006	Technology Management	Core	3
		ESM2009	Applied Statistics I : Theory and Practice	Core	3
		ESM2010	Ergonomics	Core	3
		ESM3086	Introduction to Universal Design	Core	3
		ESM3019	Operations Management	Core	3
		ESM3026	Applied Statistics II : Theory and Practice	Core	3
		ESM3062	Management Information System	Core	3
		ESM3050	Capstone Design in Systems Management Engineering	Core	3
Chemical Engineering	Chemical Engineering	GEDT017	Creative and Interdisciplinary Design	Liberar Arts	3
		ECH2005	Chemical Engineering Thermodynamics I	Core	3
		ECH2007	Fluid Mechanics in Chemical Engineering	Core	3
		ECH2017	Applied Physical Chemistry I	Core	3
		ECH2019	Industrial Organic Chemistry I	Core	3
		ECH2031	Basic Calculation in Chemical Engineering	Core	3
		ECH2032	Heat and Mass Transfer in Chemical Engineering	Core	3
		ECH3024	Chemical Engineering Laboratory I	Practical	2
		ECH3025	Chemical Engineering Laboratory II	Practical	2
		ECH3053	Chemical Reaction Engineering	Core	3
		ECH3056	Basic Chemical Engineering and Polymer Experiment	Practical	1
		ECH3055	Capstone Design of Chemical and Polymer Engineering	Core	3

Abeek Required Subject of Major

Department	Program	Class Code	Course Title	Section	Credit
Electronic Electrical Engineering	Electronic Electrical Engineering	GEDT017	Creative and Interdisciplinary Design	Liberar Arts	3
		EEE2006	Physical Electronics	Core	3
		EEE2008	Signals and Systems	Core	3
		EEE2009	Electromagnetism I	Core	3
		EEE2010	Electromagnetism II	Core	3
		EEE2011	Circuit Theory I	Core	3
		EEE2012	Circuit Theory II	Core	3
		EEE2013	Electronic Circuits I	Core	3
		EEE3056	Entrepreneurship Seminar in Electronic and Electrical Engineering	Core	1
		ICE2001	Logic Circuits	Core	3
		ICE3037	Capstone Design	Core	3
Computer Science Engineering	Computer Science Engineering	GEDT017	Creative and Interdisciplinary Design	Liberar Arts	3
		SWE2001	System Program	Core	3
		SWE2016	Algorithms	Core	3
		SWE3002	Introduction to Software Engineering	Core	3
		SWE3003	Introduction to Database	Core	3
		SWE3004	Operating Systems	Core	3
		SWE3006	Programming Languages	Core	3
		SWE2015	Data Structures	Core	3
		SWE3005	Introduction to Computer Architectures	Core	3
		ICE3037	Capstone Design	Core	3

Program Director and Contact

Program	contact	E-mail	Program Director
Mechanical Engineering	031.290.5605		LEE, CHANG GU
Civil Engineering	031.290.5603		Jang, Am
Architectural Engineering	031.290.5603		KIM, JINKOO
Advanced Materials Science and Engineering	031.290.5602	aerikim@skku.edu	JUNG, HYUN SUK
Systems Management Engineering	031.290.5602		Kong, Yong-Ku
Chemical Engineering	031.290.5604		KIM, DONG HWAN
Computer Science Engineering	031.290.5607		Seo, Eui Seong
Electronic and Electrical Engineering	031.290.5607		HWANG, KEUM CHEOL

◈ Location: 27102, Engineering Building 2

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