



Engineering in Society

Course Code			
Class Times	Mon/Wed/Thu Type A(09:00~12:00)	Classroom	TBA
Equivalent Year Level	1-4	Course Credit	3
Instructor	Junseok Hwang	Sessions	1-14
Office	37-320	Email	junhwang@snu.ac.kr

□ Instructor's Profile



JUNSEOK HWANG

Trained as a telecommunications engineer and information scientist, Prof. Junseok Hwang has been serving as a full professor of Seoul National University (SNU) and has contributed at College of Engineering through the Interdisciplinary Graduate Program of Technology Management, Economics, and Policy (TEMEP) since 2003. Prof. Hwang taught in the School of Information Studies at Syracuse University, New York (2000-2003) before he joined SNU. Regarding his work, Prof. Hwang seeks to build a world-wide platform and partnership for sustainable value creation of ICT for the cause of humanity. In recent years, he has enthusiastically involved himself with leading global ICT trend, policy development, public leadership and entrepreneurship building through education, research works and public activities. Furthermore, he has authored new 7-book series (Korean version), *Digitalogy*, proclaiming new digital philosophy of this era.

In addition to his contributions to the SNU College of Engineering, Prof. Hwang has been leading the International IT Policy Program (ITPP) in SNU as a program director with the dedicated mission of educating international IT policy specialists from around the globe. Through SNU TEMEP and ITPP, Prof. Hwang has educated and advised more than 200 post graduate government officials, public researchers, academic and industry leaders from about 50 countries as global leaders of ICT innovation and policy development. With the world-wide network of TEMEP and ITPP, he hosts annual International Symposia on Green, Smart, Development and Vision (GSDV) to exhibit ICT policy research and practices as a part of global knowledge sharing and collaboration.

He has established an interdisciplinary research institute, titled Institute of Smart Technology Information Culture and Knowledge (I-STICK). The mission of I-STICK is to explore and understand how new technological development creates a new social ecosystem with new forms of knowledge, economics, and culture; moreover, I-STICK seeks ways to amend the current generation and society that is overly centered on technology. Prof. Hwang is a member of *Academic Society for Appropriate Technology* and a NGO group called *Scientists and Engineers Without Borders*. He has been serving as an advising professor to the Institute of Global Social Responsibility of SNU since 2017.



Education

Ph.D. in Information Science and Telecommunications, University of Pittsburgh, U.S.A. 2000
M.S. in Telecommunications, University of Colorado, Boulder, Colorado, U.S.A. 1996
B.S. in Mathematics with minor in Economics, Yonsei University, Seoul, Korea. 1989

Experience

Director (2003-Date)	International IT Policy Program, Seoul National University, Seoul, Korea
Professor with Tenure (2010-Date)	Technology Management, Economics, and Policy Program, College of Engineering, Seoul National University, Seoul, Korea
Associate Professor (Oct. 2005 – 2010)	Technology Management, Economics, and Policy Program, College of Engineering, Seoul National University, Seoul, Korea
Assistant Professor (Aug. 2003 – Sep. 2005)	Technology Management, Economics, and Policy Program, College of Engineering, Seoul National University, Seoul, Korea
Assistant Professor (2000 – Aug. 2003)	Syracuse University, Syracuse, NY, <i>Assistant Professor</i>
Visiting Academic Research Fellow (May. 2001 – Aug. 2001)	Hewlett Packard Laboratories, Bristol, U.K.
Teaching Fellow (Mar. 1999 – 2000)	University of Pittsburgh, Pittsburgh, PA
Technical Research Staff (1992 – 1994)	Hyosung Computer, Center for Research and Development, Seoul, Korea
Hardware and System Hardware/Software Engineer (1989 – 1992)	Hyosung Computer, Center for Research and Development, Seoul, Korea



Research and Project Interests

- Network Economics
- Network Performance and Efficiency
- Next Generation Internet
- Spectrum Allocation Policy
- Entrepreneurship Promotion
- Digital Economy and Innovation Policy
- Intellectual Property Management
- Science Technology Innovation Policy
- IoT and Smart Technology BM and Policy
- Large Scale Project Management
- Fourth Industrial Revolution Education
- Technological Innovation in Information and Communication Technology
- Telecommunication and Smart Media Policy
- Digital Convergence Policy
- Technology Leadership
- Knowledge and Intelligence Management
- Industry 4.0 Smart Nation Policy
- Appropriate Technology for Developing Economy and Community
- Engineering Ethics
- Sustainability of Technology Management

Recent Publication

Kim, H., Lee, H., & Hwang, J. (2017). Dividing network externality into the number of peers and users — focusing on sociability and enjoyment in online games, *Information Technology & People*.

Kim, K., Jung, S., Hwang, J., & Hong, A. (2017). A dynamic framework for analyzing technology standardization using network analysis and game theory. *Technology Analysis and Strategic Management*.

Oh, S., Hong, A., & Hwang, J. (2017). An analysis of CSR on firm financial performance in stakeholder perspectives. *Sustainability*, 9(6), 1023.

Na, H. S., Hwang, J., Hong, J. Y. J. & Lee, D. (2017). Efficiency comparison of digital content providers with different pricing strategies. *Telematics and Informatics*, 34(2), 657-663.

Additional Information

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□ Course Information

Course Description	<p>The course examines past and present understandings, values, issues, and practices in the field of engineering, and their implications for future evolutions and prospects in the field. More specifically, we will review how current engineering systems and practices we see today have evolved through the various stages of industrial revolutions and their technical and social innovations. Furthermore, we will explore how these technological innovations might interact with current social changes in digital convergence (such as AI, Robotics, VR, Blockchain, Internet of Things, Smart Technologies, Platform Services etc) that have emerged from various engineering implementations and commercialization processes. The course also aims to dive deeper into emerging problems and challenges for current leaders and professionals in the field of engineering systems and businesses in global society. In the course, those problems and challenges are classified into four selected key values (Green, Smart, Development and Vision); students will be learning and developing the ethical and social responsibilities, various types of communication skills and technical competencies through innovative engineering cases and projects of those values with new ideas. Several groups of interests will be formed during the period of the course and interdisciplinary collaboration will be conducted to develop global engineering projects with real example of social and community problems. The course includes some individual activities through on-line media. Altogether, the course aims to prepare its students to develop their careers (both engineering students and non-engineering students) as global leaders and innovators of the fourth industrial revolution era.</p>
Course Evaluation	<p>Assignment & class participation 20% Individual activity 30% Final group project 50%</p> <p>Attendance will be important for keeping up with class. Good attendance and active participation will be reflected upon your final grade.</p>
Course Materials	Course materials will be provided in class.
Class Policy	Absolute grading will be given based on the performance and achievement of each individual student.
Etc.	The course will provide opportunities for students to participate in on-going global appropriate technology practices and social responsibility activities.

□ Course Schedule



Setting the value

Session 1 - Overview & Universal Values of Engineering in Global Perspectives: Green, Smart, Development and Vision_

Session 2– Historical reviews of engineering innovation in global society. Recent development of engineering technologies and their problems.

Green

Session 3– Chapter 1. Pollution of Air, Water, and Soil

Session 4 – Chapter 2. Waste Disposal Management

Session 5 - Chapter 3. Green Technology (Solar panel, Geothermal technology, Rainwater collection and purification system)

Smart

Session 6– Chapter 4. Smart Environment (Smart city, campus and island)

Session 7– Chapter5. Smart Transportation

Session 8 – Chapter 6. Smart Production

Development

Session 9– Chapter 7. Appropriate Technology

Session 10– Chapter 8. Digital Dividends

Session 11– Chapter 9. UN SDG Projects

Vision

Session 12– Chapter 10. The 4th Industrial Revolution & Future Forecasting

Session 13– Chapter 11. Global Leadership & Smart Entrepreneurship

Session 14– Chapter 12. Social Responsibility & Contribution (the Contribution of Corporate Social Responsibility, Obligation to Provide the Solution for Society)

Session 15 – *Final Group Project*