



Module Title Engineering Economics and IPR	Module Code MSDE 463	Semester (Sem 1 / Sem 2) Sem 2
Credits 10	Level 6	Professor and email Hyuk-Dong KWON atom@seoultech.ac.kr
Delivery Method Lecture / Project / Exam	Delivery Location SeoulTech, Mugung Hall	

Module Synopsis

This module aims to provide the student with an introduction to economic decision making and intellectual property right. This covers the basics of economic analysis from an engineering perspective, dealing with the principles and methods for analyzing the economic feasibility of alternatives and for making selection decisions among them.

Concepts, filing processes and search methods on intellectual properties such as patent, utility model, design and trade mark are delivered for better protection of IPRs and use in research and development.

Assessment is done with final examination and term project during the semester.

Outline Syllabus

Basic Concepts and Terminology

Interest rate and rate of return. Factors: how time and interest affect money. Time value of money and discounted cash flows. Nominal and effective interest rates.

Analyzing a Project

Present worth and future worth, Equivalent annual worth, Internal rate of return, Benefit/cost ratios, and other measures.

Evaluating Alternatives

Formulating mutually exclusive alternatives.

Methods: Present worth analysis, Annual worth analysis, Rate of return analysis, Benefit cost analysis, Breakeven analysis.

Comparing alternatives by different evaluation methods.

Understanding on Intellectual Property Right

Concepts on intellectual property such as patent, utility model, design and trade mark

Patent application and filing process

Documentation and writing a patent specification

IPR Management

Searching method on patents

Patent analysis technique



Indicative Reading

- 1) Chan S. Park, Fundamentals of Engineering Economics, 2nd ed. Prentice Hall, 2008
- 2) Chan S. Park, Contemporary Engineering Economics, 4th ed. Pearson Education Korea, 2007
- 3) L.T. Blank and A.J. Tarquin, Engineering Economy, 7th ed. McGraw Hill, 2012

NOTIONAL STUDENT WORKLOAD	Hours
MODE OF DELIVERY (FT / PT / DL)	FT
Lectures	50
Seminars	30
Tutorials	10
Laboratories/studios/practical	
Directed learning	
Independent Learning	10
Work experience/fieldwork	
Other: eg formal presentation	
Total Workload 100 hours for a 10 credit module 200 hours for a 20 credit module	100

Module Learning Outcomes

KU 1,3,4	KU1. Evaluate and apply complex knowledge of the scientific and mathematical principles of engineering to solve Real-World problems. KU2. Perform advanced analysis of unfamiliar engineering systems. KU3. Introduce and utilise complex methodologies to create solutions to a variety of Real-World engineering problems. KU4. Define and investigate complex problems and constraints that occur in engineering design with the aid of advanced tools.
IPSA 3,4	IPSA3. Derive solutions to complex health and safety, sustainability and environmental issues in the engineering sector.



MSDE Module Descriptor

	IPSA4. Ability to create innovative, sustainable critically evaluated solutions to complex engineering problems.
PVA 1,2,3	PVA1. Describe, with justification, solutions to benefit society by applying structured engineering practise with a deep awareness of ethical considerations. PVA2. Critically analyse advanced solutions to complex engineering problems. PVA3. Reflect upon interpersonal and learning skills and explain their use in differing situations.

Assessments	Assessment Type	Weighting %	Midterm/interim/final
Coursework			
Project	Workshops, Assignment	30	Midterm
Quiz			
Test			
Laboratory			
Exam	Written	70	Final exam
Presentation			