

Project Investment and Finance Analysis

1. Course Description

This course mainly expounds the basic concepts of investment economy, and introduces the basic theory, method and application of private investment and public investment decision analysis. Methods for economic evaluation of investment projects, equivalence, cost estimation, selection of alternatives, effects of depreciation, taxes and inflation, replacement analysis, sensitivity analysis, capital budgeting will be covered. Furthermore the course is designed to provide a detail explanation to the field of project finance. Besides, introduction will be given on economic analysis of public project, asset renewal, uncertainty and risk estimation skills.

2. Course Objectives and Requirements

1. Course Objectives : .

Through taking this course, students should be able to obtain the following objectives:

- ◆ Understanding the basic concepts and principles of the project investment and finance analysis technology in a global environment.
- ◆ Understanding contents and processes of financial analysis of investment projects, economic analysis of public projects and uncertainty analysis.
- ◆ Understanding how to make scientific decisions and the concepts of socioeconomic sustainable development
- ◆ Mastering the basic methods and techniques of economic appraisal and comparison of investment project and technology plan as well as benefit measurement methods of public project and the tendency of public involvement in public project.
- ◆ To develop the competency on how to make reasonable analysis according to the type of project and apply their knowledge in the practice.
- ◆ Understanding the new developments of project investment and finance in project management.
- ◆ To develop the competency on building computer spreadsheet model in solving some general problems.

2. Requirements :

With economics or finance management knowledge as prerequisites, students are expected to get prepared for lectures, finish and submit assignments as required.

3. Course Arrangement

Course name		Project Investment and Finance Analysis	Total Credit Hours	36
unit	Credit hours	Contents	Preparation of class and reading materials	Case
1	5	Unit One : Basics of Economic Decision 1.introduction 2.Interest Rate and Economic Equivalence 3. Understanding Money and Its Management 4. Debt Management	1. Park: 1 , 2, 3 2. Lecture materials	1. High-speed railway project 2. Repayment of loan of commercial bank
2	6	Unit Two : evaluation methodology of project assets 1.PW, AW, FW 2.Evaluation of Alternatives ----based on Time Value of Money 3.Overview of Capitalized Cost and Recovery: Concepts, 4.IRR and Incremental IRR	1. Park:4,5, 6 2. Lecture materials	1. Decision-making of new product plan of an enterprise
3	6	Unit Three : Analysis of Project Cash Flows	1. Park:7,8 2. Lecture materials	1. Analysis of profitability of

		1.General Cost Terms 2.Cost Classification for Predicating Cost Behaviors 3.Cost Concepts Relevant to Decision-Making 4.The meaning and types of depreciation. 5.The general scheme of U.S. corporate taxes. 6.How to determine ordinary gains and capital gains. 7.The relationship between net income and net cash flow.		investment project of an enterprise
4	4	Unit Four : Developing Project Cash Flows and Inflation 1.What constitutes project cash flow elements. 2.The use of the income statement approach in developing a project cash flow. 3.How to measure inflation. 4.Conversion from actual dollars to constant dollars or from constant to actual dollars.	1. Park:9,10 2. Lecture materials	1. Analysis of profitability of investment project of an enterprise
5	2	Unit Five : Replacements and Leasing analysis 1.Basic Concepts and terminologies 2.Economic life 3.Replacement analysis under different conditions 4.Operating and financial leasing	1. Park:13 2. Lecture materials	1. Decision-making of equipment replacement of an enterprise

6	5	Unit Six : Project Finance and Capital Budgeting 1.Introduction to Project Finance 2.Public-Private Partnership 3.Cost of capital 4.Capital budgeting decisions	1. Park: 14 2. Lecture materials	1. Capital budget of a land development project
7	2	Unit Seven : Economic Analysis in the public Sector 1.Cost-Benefit Analysis 2.Cost-Effective Analysis	1. Park: 15 2. Lecture materials	1. Cost-benefit analysis of an educational program
8	2	Unit Eight : Risk Assessment and Management	1. Park:11,13 2. Lecture materials	1. Uncertainty analysis of an industrial project

4. Teaching Methods

Lectures、Discussions、Oral reports, etc.

5. Learning Outcomes Expected

Category	Learning Outcomes
Master of Knowledge	1. Master the basic concepts, theories and development trend of Project Investment and Finance Analysis 2. Familiar with fund collecting methods and learn the concept of project financing 3. Master essential theories and methods of fund structure, investment structure, finance structure and credit guaranty structure of project finance 4. Master the whole processes of financial analysis of investment project 5. Familiar with the method of economic analysis of public project — cost-benefit analysis, and learn the method of cost-effectiveness analysis and the main contents of economic analysis 6. Familiar with environment and development of project finance

	<ol style="list-style-type: none"> 7. Familiar with the application of computer skills in economic appraisal of investment project 8. Understand the impact of such concepts as sustainable development and social fairness on project appraisal
Intellectual abilities learned	<ol style="list-style-type: none"> 1. Possess ability to plan project finance 2. Possess ability to analyze and compare projects. 3. Possess ability to use scientific idea and methods to decision making 4. Possess ability to do international project investment and financing
Practical skills learned	<ol style="list-style-type: none"> 1. Possess ability to risk identification, assessment, quantification and management 2. Possess ability to risk management 3. Possess ability to choice and design project investment structure 4. Possess ability to decision-making for project investment 5. Possess ability to choice project finance model 6. Possess ability to cash flow estimation 7. Possess ability to using computer skills to solve real-world economic issues of the project
Personal competences and characters Cultivated	<ol style="list-style-type: none"> 1. The competence of thinking questions by using international view and the idea of sustainable development 2. The competence of critical acceptance of knowledge and innovative 3. The competence of flexibly contingency management according to different external environment 4. Character of "respect others "and humanism 5. Have the charm of leadership and responsibility 6. The team spirit of cooperation 9. Think with sustainable development and social fairness in mind

6. Performance Evaluation: Means & Ratio

Evaluation Means	Ratio (%)	Relation to the Intended Learning Outcomes
individual assignments	30	Centering on case study, it aims to evaluate the students' ability to analyze and solve actual problems with the acquired relevant knowledge.

Attendance and Engagement	20	It aims to evaluate the students' understanding of engineering economics and the ability of expression as well as the ability of group participation and effective communication based on rate of attendance and performance in class of the students.
Exam	50	An open-book exam (100 points) will be given to valuate the students' understanding of the basic concepts and theories and important methods to assess the students' ability to understand and apply basic knowledge.

7.Textbook , References and Reading Materials

1) Core textbook

[1] Chan S. Park, Contemporary Engineering Economics, 5th ed. Upper Saddle River , NJ: Prentice Hall , 2010

2) Main reference book

[1] Shao Yinghong, Huang yuxiang, Engineering economics, 5th ed. Tongji University press, 2015

[2] Shao Yinghong, The economic evaluation and decision of public project, Tongji Universtiy press, 2010

3) Reading materials

[1] GUIDELINES FOR SUCCESSFUL PUBLIC – PRIVATE PARTNERSHIPS
http://europa.eu.int/comm/regional_policy/sources/docgener/guides/PPPguide.htm

[2] An introduction to cash flow valuation method, Harvard Business School, October 16, 1995

[3]Benjamin C. Esty. Improved techniques for valuing large-scale projects. The journal of Project Finance, 1999

[4] D.Pearce et al. Cost-Benefit Analysis and Environment—Recent Development, OECD, (2006) ;

[5] M.D. Adler: “Rethinking Cost-Benefit Analysis”, The Yale Law Journal, Vol.109, 1999, p165-248

[6] Thomas E. Copeland, Philip T. Keenan. Making real option real. The Mckinsey Quarterly 1998 Number 3

[7] Thomas E. Copeland, Philip T. Keenan. How much flexibility worth? The Mckinsey

Quarterly 1998 Number 24) Quentin Wodon & Shlomo Yitzhaki: “Evaluating The Impact of Government Programs on Social Welfare: The Role of Targeting and The Allocation Rules Among Program Beneficiaries”, Public Finance Review, 2002, vol.30, No.2, p102-123

[8] Robert J. Brent: “A Simple Method for Converting a Cost-Effectiveness Analysis into a Cost-Benefit Analysis With an Application To State Mental Health Expenditures”, Public Finance Review, 2002, vol.30, No.2, p144-160

4) Online resources

[1]Tongji university library database resource: <http://www.lib.tongji.edu.cn/>

[2] The world bank website: <http://www.worldbank.org.cn/Chinese/>

[3]The Asian development bank website: The Asian development bank website

[4]OMB: <http://www.whitehouse.gov/omb>

[5] HM Treasury: <http://www.hm-treasury.gov.uk/>

5) Periodicals and Magazines

[1] The Journal of Quantitative & Technical Economics

[2]Technology Economy

[3]Investment research

[4]Economic research

[5] Harvard business review

[6] Construction Management & Economics

[7] JOURNAL OF ECONOMICS AND ENGINEERING

[8] Public Finance Review

[9] The journal of Project Finance

8. Cases

[1] High-speed railway project

[2] Repayment of loan of commercial bank

[3] Analysis of profitability of investment project of an enterprise

[4] Decision-making of equipment replacement of an enterprise

[5] Capital budget of a land development project

[6] Cost-benefit analysis of an educational program

[7] Eurotunnel Project

9. Assignment Requirements

Assignment A、 B

Questions in the textbook or written by the lecturer.

Assignment C

Literature review at least 10 articles

Do presentation in the class, each one need to submit PPT and the WORD file

The criteria of assignment C evaluation (20 points)

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|---|----------|
| 1) Whether the question is related to the course, whether there is a theory or practical significance | 5 points |
| 2) Whether the literature review reflect some ideas completely | 5 points |
| 3) Whether the insights is linked with work practice closely or not | 5 points |
| 4) Whether the PPT and document is made seriously and beautiful | 5 points |

Appendices:

1. The course PPT
2. Case material
3. Other teaching material (such as reading materials, the articles)