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 detailed 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

<table>
<thead>
<tr>
<th>Course name</th>
<th>Project Investment and Finance Analysis Contents</th>
<th>Total Credit Hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Preparation of class and reading materials</td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit</th>
<th>Credit hours</th>
<th>Unit One: Basics of Economic Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>1. introduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Interest Rate and Economic Equivalence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Understanding Money and Its Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Debt Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Park: 1, 2, 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Lecture materials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. High-speed railway project</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Repayment of loan of commercial bank</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit</th>
<th>Credit hours</th>
<th>Unit Two: evaluation methodology of project assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>6</td>
<td>1. PW, AW, FW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Evaluation of Alternatives based on Time Value of Money</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Overview of Capitalized Cost and Recovery: Concepts, 4. IRR and Incremental IRR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Park: 4, 5, 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Lecture materials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Decision-making of new product plan of an enterprise</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit</th>
<th>Credit hours</th>
<th>Unit Three: Analysis of Project Cash Flows</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>1. Park: 7, 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Lecture materials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Analysis of profitability of</td>
</tr>
<tr>
<td>Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
| 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 |
|  |  |  |  |
| 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. Analysis of profitability of investment project of an enterprise |
| 4 | 4 | 1. Park:9,10  
2. Lecture materials |  |
| 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. Decision-making of equipment replacement of an enterprise |
| 5 | 2 | 1. Park:13  
2. Lecture materials |  |
### 4. Teaching Methods

Lectures, Discussions, Oral reports, etc.

### 5. Learning Outcomes Expected

<table>
<thead>
<tr>
<th>Category</th>
<th>Learning Outcomes</th>
</tr>
</thead>
</table>
| 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 |
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
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
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
1. The competence of thinking questions by using international view and the idea of sustainable development
2. The competence of critical acceptation 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
7. Think with sustainable development and social fairness in mind


<table>
<thead>
<tr>
<th>Evaluation Means</th>
<th>Ratio (%)</th>
<th>Relation to the Intended Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>individual assignments</td>
<td>30</td>
<td>Centering on case study, it aims to evaluate the students’ ability to analyze and solve actual problems with the acquired relevant knowledge.</td>
</tr>
</tbody>
</table>
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.

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

2) Main reference book

3) Reading materials


4) Online resources

5) Periodicals and Magazines
[3] Investment research
[4] Economic research
[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)
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)