Unit 4: Weather, Energy and Insurance Derivatives: (12 hours)

Introduction to Weather derivatives, Understanding HDD & CDD and its calculation. Energy Derivatives: Trading of Crude Oil, Natural Gas and Electricity, Modeling Energy prices, Understanding Insurance derivatives.

Essential Readings:

1. John C. Hull. Options, Futures and Other Derivatives (Eighth ed.). Pearson Education.

Additional Readings:

1. JurgenFranke, Wolfgang Hardle and Christian Hafner. Introduction to Statistics of

Financial Markets.

2. R. Madhumathi, M. Ranganatham. Derivatives and risk management (1st ed.) Redhead,

K. Financial Derivatives- An introduction to futures, forwards, options, swaps. Prentice

Hall of India

3. McDonald, Derivatives Markets, (latest ed.), Pearson.

4. Robert Reitano, 2010, Introduction to Quantitative Finance, MIT Press.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

DSE 15: INFRASTRUCTURE FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Infrastructure Finance DSE-15	4	3	1	0	Class XII	Financial Management

Course Objective:

- To equip the students to understand the basic project financing framework; the rationale for using project financing as opposed to direct conventional financing; the identification and management of risks associated with a large scale project; evaluating a project's viability using analytical tools; sources of project funds; using public-private partnerships as a mode of

project financing; and the crafting of contractual arrangements to allocate a project's risk and economic rewards among the parties involved.

Learning Outcomes:

After studying the course the student will be able to

- Understand the basic project financing framework and the circumstances in which project financing is likely to be appropriate.
- Integrate and apply the necessary qualitative and quantitative tools and techniques (learned in real estate and corporate finance) to evaluate project viability
- Engineer financial arrangements to allocate the risks and returns of the project to the participants in the project.

Course Contents:

Unit 1 Introduction to Infrastructure Finance (9 hours)

Infrastructure financing: Rationale, Corporations, Finance and Projects, Project company Business Model, Project Cycle, Private Finance Initiative- Origin, Types and Features, Procurement process principles , Contract and control structure , special purpose or project vehicle and financing, Public Private collaboration: Types of PPP, Financial risk in PFI and PPPs, Challenges for PFI and PPP

Unit 2- Managing Risk in Project Finance Transactions (12 hours)

The project cycle revisited, Risk management approaches, The project company and risk identification, Risks in the construction phase, Risk during operations- Revenue Risks, Operating Cost Risks, Technical Risks, Environmental and Social Risk, Financial Risks – Interest rate risks, Currency risks, Loan and investor syndication, Taxation risks, Legal and political risks ,Project insurance.

Unit 3- Financial Evaluation and Financial Structure (12 hours)

Sources of Finance: Project funding: equity and debt, Private equity: infrastructure funds, Sovereign wealth funds, Equity: issues facing investors, Debt - International development banks- A/B loans, National development banks, Export credits, Commercial bank loans, Bonds, Leasing, Offsets.

Valuation and the project company, Valuation and the project company as a single-asset business, Capital budgeting decisions

Quantitative analysis, Measures used by investors, Payback period, Present values and internal rates of return, Measures used by lenders, Debt service cover ratio, Interest cover ratio, Coverage ratios, Cash flow models

Unit 4: Project Process and Contractual Framework (12 hours)

The contractual framework, corporate identities and issues, Preliminary documents, Construction contract, Operations and maintenance contract, Supply contract, Sales contract, Payment structures,

Tolling contract, Contracts for difference, Availability payment, Loan agreement, Intercreditor agreement, Shareholder's agreement.

The project process, Project/public private partnership unit, Project process structure, Business plan/project information memorandum, Activities in the bid process, Procurement laws and infrastructure, Timetable and bid costs, Innovative proposals, Raising the funds, Mandate letter, Due diligence, Project monitoring

Essential Readings:

1. Blaiklock, M. (2014). *The infrastructure finance handbook: principles, practice and experience*. Euromoney Books

2. Pretorius, F., Chung-Hsu, B. F., McInnes, A., Lejot, P., & Arner, D. (2008). *Project finance for construction and infrastructure: principles and case studies*. John Wiley & Sons.

Additional Readings:

1. Esty, B. C., & Sesia, A. M. (2007). An overview of project finance and infrastructure finance 2006 update. Boston, MA: Harvard Business School.

2. Pouliquen, L. Y. (1970). Risk Analysis in project appraisal. World Bank staff occasional papers, No.11 (Washington D.C., IBR), 52-62.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

GENERIC ELECTIVE (GE) COURSES

GE 11: INTRODUCTION TO DIGITAL FINANCE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/Practice		
Introduction to Digital Finance GE- 11	4	3	1	0	Class 12	None