

# **DERIVATIVES II**

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**TA: TBD**

### **Course description**

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The course is designed as a follow-up to Derivatives I so we pick up exactly where we left off. Hence Derivatives I is a prerequisite for this one. Also, Banking and Financial instruments will be very helpful. We start by discussing credit instruments and provide an overview of the credit derivative instruments, a framework for understanding basic valuation concepts as well as real world applications of credit derivatives. We then move to some interesting applications of Derivatives to both retail and corporate worlds. Along the way we touch upon some well-known exotic derivatives.

There will be several case studies that will require you to work in teams. All the cases are inspired by real world problems and test your business acumen, understanding of risks and ability to persuade your colleagues and opponents.

As with the first part of the course ideas, concepts and applications prevail over hardcore rigor although some math will be used. We will also discuss the risks of the derivative instruments extensively and cover many famous derivatives' losses in financial history.

#### **Prerequisites**

Derivatives I. Introduction to Banking and Financial Instruments helpful.

#### **Seminars**

There will be 3 seminars with the TA to focus on more technical areas of the course

### **Grading**

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Your course grade will be determined by results of your homeworks, case solutions & final exam.

(20%) Homeworks. There will be 3 - 4 HW assignments.

(30%) Case solutions. There will be 2 cases.

(50%) Final exam covers core topics of the course.

## **Course intended schedule and contents**

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<b>Class</b>	<b>Topic</b>	<b>Reading</b>
<b>1-2</b>	<ul style="list-style-type: none"> <li>• Necessary concepts:               <ul style="list-style-type: none"> <li>○ Funded vs. unfunded</li> <li>○ Fund transfer pricing</li> </ul> </li>   <li>• Single name credit instruments               <ul style="list-style-type: none"> <li>○ Bond credit spreads (ASW, Z-spread etc) recap</li> <li>○ Credit Default Swaps (CDS)</li> <li>○ CDS pricing and survival curve bootstrapping</li> <li>○ Interpreting risk neutral probabilities of default</li> <li>○ What happens at default – determination auctions example</li> <li>○ CVA</li> </ul> </li> </ul>	[1] Ch. 23-24 SR
<b>3</b>	<ul style="list-style-type: none"> <li>• Single name credit continued.               <ul style="list-style-type: none"> <li>○ Total Return Swaps (TRS)</li> <li>○ TRS case study. Why are bond indexes being taken away from banks?</li> </ul> </li>   <li>• Multi-name credit derivatives and correlation products               <ul style="list-style-type: none"> <li>○ Default baskets</li> <li>○ FTD</li> <li>○ CDO</li> <li>○ Conceptual problems pricing multi-name credit instruments</li> </ul> </li> </ul>	[1] Ch. 24 SR
<b>4-5</b>	<ul style="list-style-type: none"> <li>• Retail and corporate instruments               <ul style="list-style-type: none"> <li>○ Structured notes</li> <li>○ Dual currency instruments</li> <li>○ Synthetic loans</li> <li>○ Synthetic deposits</li> </ul> </li>   <li>• In class case solution. Case 1 - Synthetic loan refinancing</li> </ul>	SR Case 1.
<b>6</b>	<ul style="list-style-type: none"> <li>• Exotics 101               <ul style="list-style-type: none"> <li>○ Libor in arrears</li> <li>○ Quanto</li> <li>○ Barrier Options</li> </ul> </li> </ul>	[1] Ch. 25
<b>7</b>	<ul style="list-style-type: none"> <li>• Corporate hedging               <ul style="list-style-type: none"> <li>○ In class case solution. Corporate commodity hedging</li> <li>○ World's largest derivatives' losses: what went wrong</li> </ul> </li> </ul>	[1] Ch. 25 [1] 35 Case 2 SR

## **Description of course methodology**

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Students are expected to effectively prepare to each class. There will be 3 seminars with the TA to focus on more technical areas of the course.

## **Course materials**

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### **Recommended textbooks and materials**

1. Hull, Options, Futures, and Other Derivatives, Prentice-Hall Editions 8<sup>th</sup>, 9<sup>th</sup>

While the Hull's book is a standard go-to textbook for the introductory course on derivatives the other the book by Neftci though less known is written with passion for the subject and a bit more practical. There also will be a list of selected readings (SR) that I will provide separately. Those are very instructive and highly recommended for you to read.

2. Neftci, Principles of Financial Engineering, Elsevier
3. Selected Reading list:
  - a. KAMAKURA Corporataion: TRANSFER PRICING SYSTEMS DESIGN:BUILDING CLARITY IN THE RESPONSIBILITY FOR AND MEASUREMENT OF RISK
  - b. Lehman Brothers: Credit Derivatives Explained
  - c. Lehman Brothers: Guide to Exotic Credit Derivatives
  - d. TBC

## **Academic integrity policy**

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Cheating, plagiarism, and any other violations of academic ethics at NES are not tolerated.