

Financial Engineering & Financial Services

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Course Objectives

Financial engineering (FE), generally speaking, is aimed at generating financial solutions. The scope of FE varies between "very narrow" and "very extensive". In a narrow sense FE just deals with specific financial products capable to hedge risk. An extreme interpretation of this narrow view even limits FE to specific derivative products, such as options and/or futures. In the MBA-structure on hand, these more limited aspects of FE are encompassed by the module "Risk Management & Derivatives". In the module "Financial Engineering & Financial Services this overlapping feature will be made clear but FE in the narrow sense of "innovative financial products" will find its place within a far more general and broad interpretation of FE.

Knowledge and skills after completing the course

Students will learn how to identify and to define precisely financial problems. They will learn how to combine well established elements of the financial product universe in order to construct new ("innovative") products on the basis of a building block approach. Moreover, they will learn how to find solutions to specific, individual problems in finance paying equal attention to the (objective) production aspects of the problem solution and the subjective wishes and necessities of the individual client to serve.

Course format and teaching methods

"Students will be instructed primarily on a lecture basis. Preparation and elaboration of the subject is expected to occur by reading the assigned text material. Active knowledge perception and acquisition will be enhanced by entering into dialogue with students trying to answer questions specifically aiming at repeating and deepening the understanding of crucial aspects. Structured learning is fostered by various handouts including a comprehensive reader that gives a detailed structure of the lecture contents and an elaboration on major subjects thereof. Moreover, students should feel free to engage in a question/answer dialogue during the lecturing phase whenever helpful. In addition, a catalogue of questions and case studies will be handed out to students in order to encourage proficiency studies on an autodidactic basis."

Integration of Theory with Practice; Relationship with other Courses

The field of Financial Services (FS) has been growing fast during the last decades or so. The idea of leasing goods instead of selling them proved to be an outstanding success. The variability and adaptability of leasing contracts have increased dramatically alongside with the sophistication of customer service activities. The proliferation of near banks into the realm of traditional commercial banking - and, lately, even into the field of investment banking, for that matter - is another example of quickly expanding Financial Services. Near banks generally are off-shoots from traditional non-financial business, such as automobile selling, comprising actually nearly the whole span of consumption goods marketing. The rationale of near banks derives itself solely from the intention to assist consumers with respect to their financial handling and realisation of consumption targets. But also in the producing sector of the economy there has been an outburst of FS, taking forfeiting, factoring, franchising, venture financing, fleet management and, in the case of large-scale productive activities, complex financial project management as examples. FS evidently are quite similar to FE, on a conceptual basis: FS clearly are consumer-oriented. The same holds true for FE. FS have to be developed and implemented in a professional manner assembling all the necessary building blocks in order to "build" a proper solution. The same hold true, once again, for FE.

Course content

Taking a broad and comprehensive view, FE has to address a diversity of aspects and topics: These may be grouped into two major fields:

1. Financial Engineering is an analogue to technical progress. Put more precisely, FE, in the first place, is the driving force behind financial progress. From a Schumpeterian point of view financial progress can be split up into three aspects. First, there is product innovation. Thus, FE deals with creating new ("innovative") financial products, for example, derivative products, such as options. Secondly, there is process innovation. Thus, FE deals also with creating new ("innovative") financial processes such as a clearing system or a cash management system. On the macroeconomic level problems like "building of an financial architecture" or "management of the international ebt problem" might well fall into the process or systems aspect of FE. Thirdly, arguing with Schumpeter, there should be an aspect referring to "conquering new markets". Although one might think of mergers & acquisitions or of organising a global presence for financial institutions this is not the whole story. On this third level, FE also has to take care of financial strategy and trading systems such as asset allocation strategies, portfolio insurance, trading rules for portfolio management, and so on.

2. Financial Engineering is also an analogue to financial marketing und Customer Relationship Management (CRM): In marketing the concept of product orientation has long since been substituted by the concept of customer orientation. Stressing this aspect FE has been defined by some authors and researchers as offering individual solutions to financial problems of any sort. Thus, the task of the financial engineer not simply consists in developing a financial solution (or product) on a general, maybe functional level, but on an individual customer-oriented level. Thus, the problem solving starts with the customer and not with the product. This interpretation of FE offers a strong and decisive link to the second part of this studying block addressing "Financial Services". The "Service" Component, according to modern marketing standards, is not only crucial when it comes to

building up a strong and enduring relationship between company and customer but it also has its focus on the artisany component of FE. This means that the individual solutions have to be found in accordance to the technical and practical engineering principles. Put differently, the individual solutions must not only be found in close contact with the customer but they must be implemented in a professional manner as well taking into account the "technical" aspects of problem solving.

Exam

Regularly written exam. In addition written homework and presentation.

Reading list

Bodie, Zvi: Investments, McGraw Hill, 2001.

Cuthbertson, Keith, Nitsche, Dirk: Financial Engineering, Derivatives and Risk Management, John Wiley, New York 2001.

Eckl, S., Robinson, J.N., Thomas, D.C.: Financial Engineering, A Handbook of Derivative Products, Basil Blackwell, Oxford 1991.

Markowitz, Harry: Portfolio Selection: Efficient Diversification of Investments, John Wiley, New York 1959.

Sharpe, William F., Alexander, Gordon J., Bailey, Jeffery V.: Investments, Prentice Hall, Englewood Cliffs, N.J. 1998.

Stöttner, Rainer: Reader prepared for the lecture, Kassel, 2004.