

# MScFE 560 Financial Markets Syllabus

## Course Overview

In this first course for the MScFE program, students are introduced to the world of professional finance: markets, products, participants, and regulation. This course discusses the activities within financial markets, including trading, financing, brokering, pricing, hedging, optimizing, and managing risk. Throughout the course, students identify a list of significant factors that affect the financial industry. Students will be able to interact with spreadsheets that illustrate these concepts. Students will explore the rich variety of asset classes including rates, equities, cryptocurrencies, credit products, derivatives, ETFs, securitized products, real estate, commodities, and FX. Understanding the asset classes, activities, and influential aspects of the financial landscape will provide a solid foundation on which students will build mathematical and computational tools to develop models for financial engineering. No background in finance is required (**Embedded FFE Certificate: Course 1<sup>1</sup>**).

<b>Credits</b>	4 Semester Credit Hours
<b>Course Materials</b>	Lesson notes, required readings (Open Access), additional free online resources to deepen existing course content
<b>Methods of Instruction</b>	Video lectures, live sessions, screencasts, interactive models
<b>Methods of Assessment</b>	Quizzes, collaborative review tasks, final test
<b>Curriculum Revision Date</b>	October 1, 2024
<b>Prerequisites</b>	None

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<sup>1</sup> Upon completion of the first two courses in the Master of Science in Financial Engineering program **with a cumulative average score of 80% or higher**, students will earn the Foundations of Financial Engineering (FFE) Certificate. See FFE Certificate Completion and MScFE Matriculation section on Page 7 of this Syllabus.

## Course Learning Outcomes

Upon successful completion of the course, you will be able to:

<b>CLO 1</b>	Identify the world of professional finance: markets, products, participants, and regulation
<b>CLO 2</b>	Outline the activities within financial markets: trading, financing, brokering, pricing, hedging, optimizing, and managing risk
<b>CLO 3</b>	Run spreadsheets to understand the definition and consequence of factors such as volatility, correlation, and credit risk within the financial landscape

## Module Objectives

Upon completion of each module in the course, you will be able to:

<b>Module 1:</b> Credit Risk and Financing	<ul style="list-style-type: none"><li>• Identify the world of professional finance: markets, products, participants, and regulation</li><li>• Get familiar with the mathematics of present and forward values</li><li>• Work through examples in web apps or spreadsheets by using cash flow discounting, calculating return and volatility, measuring credit risk factors, and using models</li><li>• Outline the activities within financial markets: trading, financing, brokering, pricing, hedging, optimizing, and managing risk</li></ul>
<b>Module 2:</b> Return and Volatility	<ul style="list-style-type: none"><li>• Assess the risk-return relationships of equities and cryptocurrencies</li><li>• Evaluate if the return distribution can be modeled by a Gaussian distribution</li><li>• Calculate the return and volatility of a security distinguishing between arithmetic and logarithmic returns.</li><li>• Quantify the relationship between a security's return and risk</li><li>• Determine the fair value of a company's shares using the Gordon Growth Model (GGM) and its extensions like the mGGM and the H models</li></ul>
<b>Module 3:</b> Correlation	<ul style="list-style-type: none"><li>• Outline the advantages and disadvantages of ETFs</li><li>• Understand correlation and what kind of relationships between variables it can capture</li><li>• Explain the influence of correlation in portfolios and ETFs</li><li>• Describe the benefits of diversification</li><li>• Calculate portfolio returns, volatilities, and Sharpe ratios</li><li>• Assess the relationship between volatility and correlation in stressed markets</li></ul>

<b>Module 4:</b> Leverage and Non-Linearity	<ul style="list-style-type: none"> <li>• Understand futures, forwards and options contracts and their multiple uses</li> <li>• Identify the factors that affect an option's price</li> <li>• Understand the exercise style and payoff of options and their combinations</li> <li>• Assess the role of leverage and non-linearity in both options and the housing market</li> <li>• Relate the influence of leverage and non-linearity on speculation</li> </ul>
<b>Module 5:</b> Liquidity and Regulation	<ul style="list-style-type: none"> <li>• Analyze credit risk by assessing the borrower and loan in terms of capacity, capital, collateral, conditions, and character</li> <li>• Compare collateral pools in terms of common credit risk statistics such as loan-to-value (LTV) and debt-to-income ratios</li> <li>• Describe the securitization process from mortgage borrower application to mortgage-backed security investor purchase Predict the outcome of situations involving moral hazard and when regulation may be needed</li> <li>• Understand credit spreads and credit default swaps</li> <li>• Assess and quantify concentration and liquidity risk</li> </ul>
<b>Module 6:</b> Model Failure and Crisis	<ul style="list-style-type: none"> <li>• Understand how to use a balance sheet and to calculate an equity multiplier to measure leverage</li> <li>• Analyze how to decide between a decision to rent or buy a home</li> <li>• Appreciate the role of REITs and REOCs and how they contribute to shape the housing market</li> <li>• Comprehend and contrast fundamental analysis, technical analysis, behavioral analysis, and sentiment analysis as tools to value assets</li> </ul>
<b>Module 7:</b> Integrating Ethics with Financial Challenges	<ul style="list-style-type: none"> <li>• Identify concepts and challenges that are part of the financial landscape</li> <li>• Become aware of how normal markets and markets “under stress” can impact the valuation of financial assets</li> <li>• Discover duration and convexity to measure interest rate risk for bonds</li> <li>• Analyze the motivation for empirical data analyses using quantitative and computational methods</li> <li>• Inspect classic cases of unethical behavior by individuals in the industry that led to fines, arrests, and financial disaster or ruin for their companies</li> </ul>

## Credit Hour Policy

WorldQuant University awards semester credit hours. A 4-semester credit hour course requires students to spend approximately 180 hours engaged in coursework over 7 weeks (**ca. 25 hrs/week**). Coursework includes 60 hours of academic engagement (i.e., instructor-led activities such as watching video lectures, participating in interactive discussions via the forums) and 120 hours of preparation (i.e., completing reading assignments, conducting research, completing projects). Note that these are average times, derived from generally accepted average standards.

	Activity	Average hours	Est. hours/course
<b>Academic Engagement</b>	Watching and mastering video lectures and online multimedia content	2 hr/week	14
	Participating in discussion forums with instructors and peers	2 hr/week	14
	Seeking clarification about course content	1 hr/week	7
	Participating synchronously in Live Session or watching it asynchronously	2 hr/week	14
	Taking graded quizzes	2 hr/week	14
	<b>Total</b>		<b>63 hours (60h target)</b>
<b>Preparation</b>	Reading and mastering Lesson Notes and Required Readings (includes preparing to take graded quizzes)	9 hrs/week	63
	Completing 2 CRT assignments	3 hrs/assignm.	6
	Reviewing 4 CRT assignments from peers	1 hr/assignm.	4
	Performing research and developing 2 Group Work Projects	9 hrs/project	18
	Collaborating with teammates via discussion forums to complete the Group Work Projects	2 hr/week	14
	Completing Practice Quizzes	2 hr/week	14
	<b>Total</b>		<b>119 hours (120h target)</b>

# Graded Assessments and Grading Policies

## Assessments and Deadlines

The chart below lists the graded assessments that are required for course completion and their associated Modules along with the deadlines for submission.

Submission Deadlines		
Module	Assessment	Deadline
Module 1	Quiz M1	Monday (Day 7)
Module 2	CRT1 (Submission)	Monday (Day 14)
	Quiz M2	Saturday (Day 19)
Module 3	CRT1 (Assessment)	Monday (Day 21)
	Quiz M3	Saturday (Day 26)
Module 4	CRT 2 (Submission)	Monday (Day 28)
	Quiz M4	Saturday (Day 33)
Module 5	CRT2 (Assessment)	Monday (Day 35)
	Quiz M5	Saturday (Day 40)
Module 6	Quiz M6	Saturday (Day 47)
Module 7	Quiz M7	Thursday (Day 52)
–	Final Test (Modules 1-7)	Saturday (Day 54)

*\*The deadline to earn participation points is the final day of the course (**Day 54**)*

*\*\* All submission deadlines are set to 23:59/11:59 pm in the Universal Time Zone Coordinated (UTC). Note that UTC is also called Greenwich Mean Time (GMT). For example, if you live in New Jersey, US, during the winter months (GMT-5:00) all deadlines will appear at 6:59 pm, while during the summer months (GMT-4:00) they will appear as 7:59 pm due to the Daylight Saving Time (DST) used in the state of New Jersey. As another example, if you live in India (GMT+5:30) all deadlines will appear as 5:29 am throughout the year since India does not use the DST during the summer months.*

**Check your calendar to view the deadlines in your time zone, and make sure to take into account the DST if used in your country or US state.**

## Grading Criteria: Point Distribution and Grading Scale

You can view your progress (points earned and percentage towards final grade) by clicking on “Grades” on top of your screen. To successfully pass this course, you must earn a final grade of **70%** or above.

Graded assessments are reflected in your final course grade as follows:

Points Distribution		
Graded Assessment	Points	Percentage
Participation in discussion forums	108	
<b>Participation Total</b>	<b>108</b>	<b>11%</b>
Quiz M1	56	
Quiz M2	56	
Quiz M3	56	
Quiz M4	56	
Quiz M5	56	
Quiz M6	56	
Quiz M7	56	
<b>Quiz Assignment Total</b>	<b>342</b>	<b>39%</b>
Collaborative Review Task 1 (Submission)	70	
Collaborative Review Task 1 (Assessment)	30	
Collaborative Review Task 2 (Submission)	70	
Collaborative Review Task 2 (Assessment)	30	
<b>Collaborative Review Total</b>	<b>200</b>	<b>20%</b>
Final Test (Module 1-7)	300	
<b>Final Test Total</b>	<b>300</b>	<b>30%</b>
<b>Course Total</b>	<b>1000</b>	<b>100%</b>

The table below shows how your final grade percentage will be evaluated:

Grading Scale	
Grade Percentage	Designation
90-100	Excellent
80-89	Proficient
70-79	Satisfactory
0-69	Unsatisfactory
Withdrawal*	W

\* Students may withdraw from a course before the end of Week 3.

## FFE Certificate Completion and MScFE Matriculation

To earn the Foundations of Financial Engineering Certificate, students must:

- Complete the first two courses in the program (*MScFE 560: Financial Markets* and *MScFE 600 Financial Data*) **with a cumulative average score of 80% or above.**

Students are allowed to proceed in the Master of Science in Financial Engineering and become fully matriculated upon meeting the above mentioned requirements.

## Satisfactory Academic Progress (SAP) Requirements

Students are required to maintain Satisfactory Academic Progress throughout the completion of the Master of Science in Financial Engineering Program:

- Maintain a cumulative average score of **80%** or above
  - Failure to meet this requirement may result in program withdrawal (see SAP policy in the [University Catalog](#), page 33)
- Complete the Program within the **Maximum Time Frame (MTF)** of 150% (3 years) of the scheduled program length of two (2) years at a pace of 13 semester credits minimum earned every year

# Academic Integrity and Student Responsibilities

Commitment to the principles of academic honesty and integrity is essential to the mission of WQU. All work submitted in a course must be the student's own work.

Plagiarism is the act of presenting another person's ideas, research, or writing as your own. You commit plagiarism when you:

- copy a statement or paragraph created by another person without using quotation marks and a reference to the original author's source material;
- present the ideas of another person in your own words without giving credit;
- use information that is not considered common knowledge without giving credit to the source;
- purchase a paper from the internet or a vendor and submit it as a personal paper.

**To plagiarize or to copy the work of another person or from any AI source and to present it as your own is a violation of academic integrity.** The penalty for the first violation is course failure; a second violation may result in being terminated from the program. Refer to the [University Catalog](#) for a detailed list of consequences for academic integrity violation.

To gain a deeper understanding of plagiarism and how to avoid it, watch this [video tutorial](#), read these [Help Articles](#), and use this [Anti-Plagiarism Guide](#) to learn how to include in-text citations and references.

Below, you find some tips on what you should and should not do to avoid plagiarism:

<b>DO</b>	<ul style="list-style-type: none"><li>• Include statements (1-2 lines at most) from books or articles published by others, as long as: 1) you use quotation marks (" "); 2) you add in-text citation to ensure the reader knows that it is not yours; and 3) include a complete reference at the bottom of the paper. The statement should be used to boost or amplify your own personal opinion or argument.</li><li>• Paraphrase the idea of another person as long as it is used to bolster your own ideas, and cite the original work <b>with both in-text citations and reference.</b></li></ul>
<b>DON'T</b>	<ul style="list-style-type: none"><li>• Copy and paste from articles, books, or other sources without proper citations and references.</li><li>• Extensively cite or paraphrase entire paragraphs, even if the paragraph is within quotation marks and cited.</li><li>• Include a graph or a table with data from a work published by others.</li></ul>



## Use of Turnitin

At the time of submission, all group work assignments are run through Turnitin, which is a plagiarism detection software. Turnitin creates a similarity report that matches the submitted paper against its database (peer-reviewed journals, textbooks, internet resources, etc.) as well as papers created by other students at WQU or in other institutions. Before the submission deadline, you can download and make use of the Turnitin similarity report to revise your final paper for grading. The similarity report shows a similarity score equal to the percentage of matching found with the resources described above.

You are responsible to:

- Understand what constitutes plagiarism. In addition to the tips provided in this syllabus, extensive information and tutorials are provided in the Student Resource Center, in the Orientation Course, and in the Course Overview section of the course;
- Review the Turnitin similarity report for each assignment before the submission deadline;
- Edit your work prior to the final submission to ensure that any statements from other authors are properly quoted, cited, and **mindfully used to support your original work rather than forming the basis of the argument itself.**

Based on the Turnitin similarity report, the Instructional Team will evaluate whether you have committed plagiarism and may decide to give you a failing grade for the assignment or for the entire course (see WQU Academic Integrity Policy in the [University Catalog](#)). Note that your instructors have access to the **Turnitin AI writing indicator** showing the portion of your submission that might be developed by AI with 98% probability.

Keep in mind that when you commit plagiarism, **your Academic Integrity status is changed to “Probation,” and a note is added in your records describing the violation.** This note may prevent you from receiving recommendation letters or alumni opportunities.

## Student Code of Conduct

The Student Code of Conduct sets forth the standards of conduct expected of students at WQU. This code is not exhaustive, and you may be subject to disciplinary actions for other behavior and/or activities deemed unacceptable or disruptive to the goals and mission of WQU and the expectation of professionalism in the online learning environment.

If you violate the Student Code of Conduct, you will be subject to disciplinary actions including issuance of a warning, probation, termination, or permanent dismissal from the University. Any and all disciplinary actions will be recorded in your student academic record.

### Violations of the Student Code of Conduct\*

- All forms of violation of academic integrity including the following: cheating; fabrication; plagiarism; engaging in or facilitating academic dishonesty; republishing or redistributing any course materials, student's own work, or another student's work; and uploading WQU content to websites or linking to it through services.
- Sharing personal account information to access the online platform with anyone.
- Use of any religious, inflammatory, offensive, or flagrant language in the online learning environment, including discussion forums, or in private communications with the Instructional Team, the Academic Dean, or WQU Staff.
- Use of any religious, inflammatory, offensive, or flagrant language related to WQU or WQU representatives on social media or on WQU social media accounts.
- Endangering, threatening, or causing harm to any member of the WQU community, causing reasonable apprehension of such harm or engaging in conduct or communications that a reasonable person would interpret as a serious expression of intent to harm.
- Unauthorized use of University property and/or resources.
- Engaging in retaliation, harassment, or repeated contact that a reasonable person would understand to be unwanted, including stalking and/or sexual harassment.
- Engaging in any discriminatory activities as prohibited by applicable law or University policy.

- Engaging in any illegal sexual offense, including, but not limited to, sexual assault, public sexual indecency, or indecent exposure.
- Violation of any other University policy.
- Conduct that is illegal under state or local law.

*\*Refer to the [University Catalog](#) for a complete list of actions constituting violation of the Academic Integrity and Student Code of Conduct.*

*Syllabus revision date: January 7, 2025*