# Graduation Requirements for Master of Finance Engineering
# <For those entered in 2022 or later>

## Thesis Degree

▣ Total Required Credit: 54 Credits or more, 1AU

▣ Mandatory General Courses: 3 credits and 1AU

○ CC020 Ethics and Safety (1AU)
CC511 Probability and Statistics (3)
[Substitute: BIT500 Management Statistical Analysis (3) ]

▣ Mandatory Major Courses: 19.5credits

○ More than 3 credits must be taken among listed below courses
BAF508 Stochastic Calculus for Finance (1.5), BAF512 Applications in Stochastic Calculus for Finance (1.5), BAF516 Computational Finance (3)

○ BAF504 Investment Analysis (3)

○ BAF510 Analysis of Fixed Income Securities (1.5)

○ BAF603 Futures and Options(3)

○ BAF502 Financial Accounting(3)

○ More than 3 credits must be taken among listed below courses
BAF513 Computer Programming for Financial Engineering I (1.5),
BAF514 Computer Programming for Financial Engineering II (1.5),
BAF515 Computer Programming for Financial Engineering III (3)

○ BAF517 Research Methods in Financial Engineering I (1.5)

○ BAF518 Research Methods in Financial Engineering II (1.5)

※ The mandatory courses can be waived up to 9 credits with a permission of instructor and with an approval of the chair professor. Students exempted from taking mandatory courses must replace the waived credits with electives.

▣ Elective Courses: 22.5 Credits or more

※ The chair professor reviews courses taken from global study programs or dual degree programs to apply them to modules respectively and they are counted as elective credits. Maximum of 18 credits can be transferred to KAIST.

✣ When 'BAF805 Special Topics in Financial Engineering(1.5)' or 'BAF812 Distinguished Lectures in Financial Engineering(1.5)' courses are offered, the chair professor decided the modules for the courses respectively by considering their subtopics.

○ Concentration(Optional)

Students can choose two of the following concentrations depending on their interests and select electives satisfying what the concentrations require. Students are required to report which concentration they wish to complete and request for a concentration certification during their last semester (early April or November).

1) Concentration in Derivatives

This concentration requires minimum of 12 credits from below courses

BAF626 Estimation of Financial Engineering Models (1.5)
BAF632 Financial Security Design (1.5)
BAF633 Simulation Methods for Finance (1.5)
BAF634 Advanced Econometric Analysis for Finance (1.5)
BAF636 Interest Rate Derivatives (1.5)
BAF637 Management of Derivative Positions (1.5)
BAF641 Numerical Methods in Finance (1.5)
BAF642 Financial Time Series Analysis (1.5)
BAF644 Credit Risk Modeling and Credit Derivatives (1.5)
BAF645 Derivative Trading Strategies (1.5)
BAF649 Advanced Financial Time Series Analysis (1.5)
BAF652 Contemporary Topics in Derivatives (1.5)
BAF805 Special Topics in Financial Engineering(1.5)
BAF812 Distinguished Lectures in Financial Engineering(1.5)

2) Concentration in Quantitative Asset Management

This concentration requires minimum of 12 credits from below courses

BAF627 Portfolio Optimization and Management(1.5)
BAF630 Analysis of Economic Indicators and Forecasting(1.5)
BAF635 Real Estate Investments (1.5)
BAF639 Security Analysis and Trading Strategies (1.5)
BAF646 Statistical Arbitrage(1.5)
BAF653 Algorithmic Trading and Quantitative Trading(1.5)
BAF654 Alternative Investment(1.5)
BAF655 Fixed Income Portfolio Management (1.5)
BAF611 Investments in Venture(1.5)
BAF612 Investments in Private Markets(1.5)
BAF662 Foreign Currency Investment(1.5)
BAF663 Estimation of Asset Pricing Models(1.5)
BAF811 Distinguished Lectures in Asset Management(1.5)
BAF687 Cases in Asset Management(1.5)
BAF805 Special Topics in Financial Engineering(1.5)
BAF812 Distinguished Lectures in Financial Engineering(1.5)

3) Concentration in Fixed Income, Currency and Commodity

This concentration requires minimum of 12 credits from below courses

BAF626 Estimation of Financial Engineering Models (1.5)
BAF628 Term Structure of Interest Rates (1.5)

BAF632 Financial Security Design (1.5)
BAF636 Interest Rate Derivatives (1.5)
BAF644 Credit Risk Modeling and Credit Derivatives (1.5)
BAF646 Statistical Arbitrage(1.5)
BAF651 Mortgage Backed Securities & Other Structured Securities(1.5)
BAF653 Algorithmic Trading and Quantitative Trading (1.5)
BAF655 Fixed Income Portfolio Management (1.5)
BAF656 Commodity Trading (1.5)
BAF662 Foreign Currency Investment (1.5)
BAF621 International Finance (1.5)
BAF623 Foreign Exchange Markets and Foreign Exchange Policy (1.5)
BAF805 Special Topics in Financial Engineering(1.5)
BAF812 Distinguished Lectures in Financial Engineering(1.5)

4) Concentration in Risk Management

This concentration requires minimum of 12 credits from below courses

BAF627 Portfolio Optimization and Management(1.5)
BAF629 Advanced Derivatives (1.5)
BAF624 Principles of Insurance and Risk (1.5)
BAF632 Financial Security Design (1.5)
BAF633 Simulation Methods for Finance (1.5)
BAF634 Advanced Econometric Analysis for Finance (1.5)
BAF640 Financial Market Risk Management (1.5)
BAF642 Financial Time Series Analysis (1.5)
BAF644 Credit Risk Modeling and Credit Derivatives (1.5)
BAF648 Mathematics for Insurance (1.5)
BAF649 Advanced Financial Time Series Analysis (1.5)
BAF651 Mortgage Backed Securities & Other Structured Securities(1.5)
BAF664 Alternative Investment (1.5)
BAF688 Cases in Risk Management(1.5)
BAF805 Special Topics in Financial Engineering(1.5)
BAF812 Distinguished Lectures in Financial Engineering(1.5)

5) Concentration in Financial Analytics

This concentration requires minimum of 12 credits from below courses

BAF627 Portfolio Optimization and Management(1.5)
BAF633 Simulation Methods for Finance (1.5)
BAF638 Operational Risk Management (1.5)
BAF641 Numerical Methods in Finance (1.5)
BAF642 Financial Time Series Analysis (1.5)
BAF644 Credit Risk Modeling and Credit Derivatives (1.5)
BAF647 Artificial Intelligence and Machine Learning for Financia Engineering (3)
BAF649 Advanced Financial Time Series Analysis (1.5)

BAF650 Financial Market Microstructure (1.5)

BAF653 Algorithmic Trading and Quantitative Trading (1.5)

BAF657 Introduction to FinTech (1.5)

BAF658 Financial Information and Security Design (1.5)

BAF659 Cross-Sectional Financial Data Analysis (1.5)

BAF660 Financial Data Analysis with Big Data (1.5)

BAF661 Big Data Analysis on Credit Risks (1.5)

BAF805 Special Topics in Financial Engineering(1.5)
BAF812 Distinguished Lectures in Financial Engineering(1.5)

6) Concentration in Green Finance

This track requires minimum of 9 credits from below courses offered by Graduate School of Green Growth in which 1 course from below list should be included in addition to taking GG951 Green Project (3) as a mandatory.

[Electives]
BGM500 Introduction to Green Business (3)

BGM501 Green Technologies and Green Industries (3)

BGM502 Studies on Green Growth Strategy (3)

[Research]

BGM951 Green Finance Projects(3)

7) Concentration in Sustainable Finance

Students are required to complete GBP(Green Business and Policy) 12 credits, including 6 credits out of electives below and research

'BGM950 Sustainability Projects(3)'

[Electives]

BGM500 Green Business Theory(3)

BGM501 Green Technologies and Green Industries(3)

BGM502 Studies on Green Growth Strategy(3)

BGM541 Green Firm Valuation and Social Finance(1.5)

BAF613 Corporate Governance(1.5)

[Research]

BGM950 Sustainability Projects(3)

E. English Proficiency Requirement

① Students are required to complete two BME900 level English courses. This requirement is waived for students who have obtained S Level of Oral Proficiency Interview (OPI).

F. Research : Thesis Research 9 credits