Graduation Requirements for Master of Finance Engineering

Thesis Degree

■ Total Required Credit: 54 Credits

■ Mandatory General Courses: 3 credits and 1AU
 ○ CC020 Ethics and Safety (1AU)
  CC511 Probability and Statistics (3)
  [Substitute: BIT500 anagement Statistical Analysis (3)]

■ Mandatory Major Courses: 16.5credits
 ○ 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)
 ○ BAF509 Fundamentals of Investment and Asset Pricing (1.5)
   [Substitute: BME631 Theory of Finance I (3)]
 ○ BAF510 Analysis of Fixed Income Securities (1.5)
 ○ BAF511 Derivatives
 ○ BAF502 Financial Accounting(1.5)
 ○ 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 EngineeringⅢ(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: 25.5 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.

○ 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)
   BAF629 Advanced Derivatives (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)
   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)

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)

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)

BAF654 Alternative Investment (1.5)

BAF688 Cases in Risk Management(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 Financial
       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)

6) Concentration in Sustainability Finance
This track requires minimum of 9 credits from below courses offered by Graduate School of Green Growth in which 6 credits from below list should be included in addition to taking BGM950 Sustainability Projects(3) as a mandatory.
BGM500 Introduction to Green Business (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)

7) 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 BGM951 Green Finance Projects (3) as a mandatory.
BGM500 Introduction to Green Business (3)
BGM501 Green Technologies and Green Industries (3)
BGM502 Studies on Green Growth Strategy (3)

E. English Proficiency Requirement
① Students are required to complete two BUS900 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

G. Application
①This curriculum applies to students from the year 2021 and after.
② Students who have entered before 2021 apply to this curriculum upon receiving approval from the chair professor.

H. Interim measures
① Students who have entered in 2016 spring may apply to equivalent track(s) upon receiving approval from the chair professor, when they complete Concentration in Derivatives, Quantitative Asset Management,

Fixed Income, Currency and Commodity, Risk Management and Financial Analytics.

② For 2016 Fall entrance and before,

- FE508 Financial Engineering Programming I (1.5) can replace FE529 Financial Engineering Programming I (1) upon completion.

- FMB510 Financial Engineering Programming II (1.5) can replace FMB530 Financial Engineering Programming II (0.5) upon completion.

③ For 2019 spring entrance and before,

- MGT503 Management Statistical Analysis(3) can replace CC511 Probability and Statistics (3) upon completion.

④ Abolition on Green finance limitation applies those who entered 2021 Fall semester