
(NMgr) Programme Finance and Data Analytics (NP_MFDA)

Master's Programme N0311A050027: Finance and Data Analytics

Academic year 2023/2024

MFDA is a two-year English-language Master's degree programme that is designed to pair the key areas of finance and data analytics. The programme takes a data driven approach to analysis of financial markets and organisational information covering key theoretical principles of finance, financial modeling and financial markets to prepare students for a dynamic career in finance, banking and a range of other sectors.

Focusing on modern statistical analysis, data modeling, programming, big data and machine learning techniques, program equips the student with a thorough understanding and advanced skills in theoretical and applied finance with emphasis on computational aspects of the problems. Programme's graduates will gain quantitative, statistical and technical skills crucial for modern finance and will have the expertise to independently define and creatively solve broad variety of theoretical as well as practical problems.

English is the only language of instruction.

The programme director is [doc. PhDr. Jozef Baruník Ph.D.](#)

Programme coordinator is [PhDr. František Čech, Ph.D.](#)

- [programme description](#)
- [terms and conditions for the applicants](#)
- [how to apply](#)

Program structure:

- compulsory courses (5-10 ECTS credits each): 64 credits
- elective courses (5-6 ECTS credits each) minimum: 44 credits
- optional courses (ECTS credits each) maximum: 12 credits
- Master's Thesis
- Final exam

Final exam:

(JDIP01) Master's Thesis Defense

WS = Winter Semester (Oct - Feb), SS = Summer Semester (Feb - June).

Compulsory Courses: J#0750

<!--dg:select1:0750:2023:2023:en-->

| Code | Course title | Course leader | Semester | Hours per week | Course assessment | ECTS credit points |
|--------|---|---|----------|----------------|-------------------|--------------------|
| JEM037 | Financial Markets | Kočenda | WS | 2/2 | Examination | 6 |
| JEM059 | Financial Econometrics I | Vácha Baruník | SS | 2/2 | Examination | 6 |
| JEM116 | Applied Econometrics | Horváth Baruník Kukačka | SS | 2/2 | Examination | 6 |
| JEM207 | Data Processing in Python | Čech Hronec | WS/SS | 2/0 | Examination | 5 |
| JEM213 | Master's Thesis Seminar I | Schwarz Havránek Havránková | WS/SS | 0/2 | Course credit | 10 |

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|--------|----------------------------|-----------------------------|-------|-----|---------------|----|
| JEM214 | Master's Thesis Seminar II | Schwarz Havránek Havránková | WS/SS | 0/2 | Course credit | 10 |
| JEM217 | Advanced Econometrics | Baruník | WS | 2/2 | Examination | 9 |
| JEM220 | Data Science with R II | Křišťoufek | SS | 2/0 | Examination | 6 |
| JEM227 | Data Science with R I | Křišťoufek | WS | 2/0 | Examination | 6 |

Total: 64

Prerequisites, co-requisites, incompatibility, interchangeability for mandatory courses

<!--dg:rekv:0750:2023:2023:en-->

| Code | Course title | Pre-requisite | Co-requisite | Interchangeability | Incompatibility |
|--------|----------------------------|---------------|--------------|--------------------|-----------------|
| JEM214 | Master's Thesis Seminar II | JEM213 | | | |
| JEM217 | Advanced Econometrics | | | | JEM005 |
| JEM220 | Data Science with R II | J#R073 | | | |
| JEM227 | Data Science with R I | | | | JEM181 JEM221 |

Elective Courses: J#075123

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| Code | Course title | Course leader | Semester | Hours per week | Course assessment | ECTS credit points |
|--------|---|-----------------|----------|----------------|-------------------|--------------------|
| JEM007 | Applied Microeconometr | Pertold-Gebicka | SS | 2/2 | Examination | 6 |
| JEM019 | Statistical Methods for Data Analysis | Hlávka | SS | 2/2 | Examination | 6 |
| JEM027 | Monetary Economics | Holub | WS | 2/2 | Examination | 6 |
| JEM032 | Banking and Risk Management | Geršl Pečená | WS | 2/2 | Examination | 6 |
| JEM034 | Corporate Finance | Geršl | WS | 2/2 | Examination | 6 |
| JEM035 | Financial Markets Instruments I | Dědek | WS | 2/2 | Examination | 6 |
| JEM036 | Financial Markets Instruments II | Dědek | SS | 2/2 | Examination | 6 |
| JEM061 | Financial Econometrics II | Baruník Vácha | WS | 2/2 | Examination | 6 |
| JEM062 | Introductory Econometrics | Kukačka | WS | 2/2 | Examination | 6 |
| JEM092 | Asset Pricing | Čech | SS | 2/2 | Examination | 6 |
| JEM111 | International Macroeconomic and Finance | Holub | SS | 2/2 | Examination | 6 |
| JEM126 | Empirical Law and Economics | Dušek | SS | 2/0 | Examination | 5 |

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|--------|---|----------------|-------|-----|---------------|---|
| JEM128 | Financial Modelling Using MS Excel and VBA | Jakubík | SS | 1/1 | Examination | 4 |
| JEM132 | Company Valuation | Novák | WS | 2/2 | Examination | 6 |
| JEM142 | Banking and Financial Regulation | Tůma Dvořák | SS | 2/2 | Examination | 6 |
| JEM158 | Tools for Modern Macroeconomet | Baxa Vácha | SS | 2/2 | Examination | 6 |
| JEM161 | Private Equity | Fencí | SS | 1/1 | macc | 4 |
| JEM175 | Intermediate Microeconomics I | Šťastná | SS | 4/2 | Examination | 6 |
| JEM185 | Microeconomics of Banking | Geršl Janda | SS | 2/0 | Examination | 6 |
| JEM198 | Bank Asset and Liability Management | Kuc Kotlán | SS | 2/0 | Examination | 5 |
| JEM201 | Internship | Geršl | WS/SS | 0/4 | Course credit | 3 |
| JEM208 | Health Econometrics | Bertoli | WS | 2/2 | Examination | 6 |
| JEM228 | Systemic Risk and Macroprudential Policy | Geršl | SS | 2/2 | Examination | 6 |
| JEM229 | Treasury Management | Ranostaj | SS | 2/0 | Examination | 5 |
| JEM230 | Advanced Topics in Corporate Finance | Geršl Curi | WS | 3/3 | Course credit | 3 |
| JEM231 | Mergers and Acquisitions | Fidrmuc Gregor | WS | 3/3 | Course credit | 3 |
| JEM232 | Financial Crisis and Risk Management | Horváth | WS/SS | 6/0 | Course credit | 3 |
| JEM233 | FinTech and Blockchain | Gregor Colak | SS | 6/0 | Course credit | 3 |
| JEM234 | Version Control with Git | Hronec | WS | 5/2 | Course credit | 3 |
| JEM235 | Traditional and Alternative Risk Transfer in the Insurance Sector | Teply Pompella | WS | 2/0 | Course credit | 3 |
| JEM236 | Risk Management and Insurance | Kukačka | SS | 6/0 | Course credit | 3 |
| JEM333 | Energy Markets & Economics | Valíčková Elms | SS | 2/2 | Course credit | 3 |

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| JEM334 | Fiscal Policy, Public Debt and Sovereign Debt Ratings | Schneider | SS | 3/3 | Course credit | 3 |
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Total minimum: 44

Prerequisites, co-requisites, incompatibility, interchangeability for elective courses

<!--dg:rekv:075123:2023:2023:en-->

| Code | Course title | Pre-requisite | Co-requisite | Interchangeability | Incompatibility |
|--------|---|---------------|--------------|-------------------------|-----------------|
| JEM034 | Corporate Finance | | | JEM187 JEM188 JEM189 | |
| JEM092 | Asset Pricing | | | | JEM186 |
| JEM111 | International Macroeconomics and Finance | J#R079 | | | |
| JEM128 | Financial Modelling Using MS Excel and VBA | | | | JEM189 |
| JEM185 | Microeconomics of Banking | | | | JEM113 |
| JEM198 | Bank Asset and Liability Management | | | | JEM197 |
| JEM232 | Financial Crisis and Risk Management | | | | JEM199 |
| JEM233 | FinTech and Blockchain | | | | JEM205 |
| JEM234 | Version Control with Git | | | | JEM224 |
| JEM333 | Energy Markets & Economics | | | | JEM162 |
| JEM334 | Fiscal Policy, Public Debt and Sovereign Debt Ratings | | | | JEB129 |

Optional Courses:

Any course offered by any Department at Charles University or at partner universities.

Study plan code:

J23NPMFDA1576