

Master of Science program in Social Data Science

1-year SDS MS program course list

| <i>Modules</i> | <i>Required Credits</i> | <i>Courses</i> | <i>Term</i> | <i>Type M/ME/FE#</i> | <i>ECTS</i> |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------|--------------------------|-------------|
| Fundamental Methods of Data Science | 4 ECTS | Course from the mandatory elective course list of the module | Fall/Winter | ME | 4 |
| Specialization | 12 ECTS | Course from the list of specialization tracks | Fall/Winter | ME | 4 |
| | | Course from the list of specialization tracks | Fall/Winter | ME | 4 |
| | | Course from the list of specialization tracks | Fall/Winter | ME | 4 |
| Advanced Methods and Concepts | 12 ECTS | Topics of SDS | Fall | M | 4 |
| | | Ethics of Big Data | Fall | M | 4 |
| | | Course from the mandatory elective course list of the module | Fall/Winter | ME | 4 |
| Optional Courses | 8 ECTS | Free elective MS level course from any programs at CEU PU | Fall/Winter | FE | 4 |
| | | Free elective MS level course from any programs at CEU PU | Fall/Winter | FE | 4 |
| Academic writing | 4 ECTS | Academic Writing | Winter | M | 4 |
| Seminar | 4 ECTS | Thesis seminar course | Winter | M | 4 |
| Projects | 16 ECTS | Capstone project 1 | Winter | M | 4 |
| | | Capstone project 2 | Spring | M | 12 |
| | Fall Term Credit Total: 24 ECTS Winter Term Credit Total: 24 ECTS Spring Term Credit Total: 12 ECTS Year 2 Credit Total: 60 ECTS | | | | |

#M – Mandatory, ME – Mandatory Elective, FE – Free Elective

Modules

Fundamental Methods of Data Science Module (4 ECTS ME)

| Course code | Course Name | ECTS | Term | Type | Host dept. | Instructor |
|-------------|------------------------------------------------------|------|--------|------|------------|-------------------|
| UGST4181 | Mathematics for Advanced Methods and Concepts | 4 | Winter | ME | DNDS | Imre Fekete |
| UGST4184 | Machine Learning 2 | 4 | Winter | ME | DNDS | Petra Kralj Novak |
| CDCR6031 | Bayesian Data Analysis I | 4 | Winter | ME | Cog Sci | József Fiser |
| ECBS5146 | Data Engineering 1: SQL and Different Shapes of Data | 4 | Fall | ME | DEB | László Salló |

Advanced Methods and Concepts Module (8 ECTS M and 4 ECTS ME)

| Course code | Course Name | ECTS | Term | Type | Host dept. | Instructor |
|-------------|-------------------------------------|------|--------|------|------------|--------------------|
| DNDS6014 | Topics of Social Data Science | 4 | Fall | M | DNDS | Gerardo Iñiguez |
| TBA | Ethics of Big Data | 4 | Fall | M | TBA | TBA |
| DNDS6008 | Agent-Based Models | 4 | Winter | ME | DNDS | János Kertész |
| DNDS6022 | Dynamical Systems on Networks | 4 | Winter | ME | DNDS | Federico Battiston |
| ECBS5147 | Data Engineering 2: Cloud Computing | 4 | Fall | ME | DEB | Zoltán Csaba Tóth |
| ECBS6071 | Introduction to Data Analysis in R | 4 | Winter | ME | ECBS | Marc Kaufmann |
| TBA | Social Dynamics | 4 | Winter | ME | DNDS | Federico Battiston |

Specialization Module

Specialization in Economics sample elective course list:

| Course code | Course Name | ECTS | Term | Type | Host dept. | Instructor |
|-------------|------------------------------------|------|--------|------|------------|-------------------------------|
| ECBS5019 | Econometrics 1 | 8 | Fall | ME | DEB | Róbert Pál Lieli & Ádám Reiff |
| ECBS5035 | Microeconomics for Economic Policy | 8 | Fall | ME | DEB | Mats Köster & Paul Voss |
| ECBS5061 | Econometrics 2 | 8 | Winter | ME | DEB | Sergei Lychagin & Arieda Muco |

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|----------|----------------------------------------------------------------------------|---|--------|----|------|--------------------|
| ECBS5138 | Data Analysis 1: Exploration - Economic Policy track | 4 | Fall | ME | DEB | Gábor Békés |
| ECBS5145 | Data Analysis 2: Finding Patterns with Regressions - Economic Policy Track | 4 | Fall | ME | DEB | Tímea Laura Molnár |
| ECBS5181 | Financial Econometrics | 4 | Winter | ME | DEB | TBA |
| ECBS5215 | Fintech in Depth | 4 | Winter | ME | DEB | Soomin Lee |
| ECBS5246 | Theory and Practice of Economic Forecasting | 4 | Winter | ME | DEB | TBA |
| ECBS5349 | Entrepreneurship and Innovation | 4 | Winter | ME | DEB | Andrea Kozma |
| ECBS5401 | Sustainable Finance | 4 | Spring | ME | DEB | Christian Schopper |
| ECBS6065 | Psychology and Economics | 8 | Winter | ME | DEB | Marc Kaufmann |
| ECBS6067 | Prediction with Machine Learning for Economists | 4 | Fall | ME | DEB | Gábor István Békés |
| ECBS6253 | Machine Learning for Natural Language Processing 1 | 4 | Spring | ME | DEB | Arieda Muco |
| DNDS6032 | Data Science for the Sustainable Development Goals | 4 | Winter | ME | DNDS | Elisa Omodei |

Specialization in Environment Science sample elective course list

| Course code | Course Name | ECTS | Term | Type | Host dept. | Instructor |
|-------------|----------------------------------------------------|------|--------|------|------------|--------------------|
| ENVS5132 | Introduction to Geospatial Analysis | 6 | Winter | ME | DESP | Viktor Lagutov |
| ENVS5190 | Humans and the Biosphere | 2 | Fall | ME | DESP | Ruben Mnatsakanian |
| ENVS5191 | The Non-human Biosphere | 2 | Fall | ME | DESP | Ruben Mnatsakanian |
| DNDS6032 | Data Science for the Sustainable Development Goals | 4 | Winter | ME | DNDS | Elisa Omodei |
| UWC5010 | Introduction to Geospatial Data Visualization I | 2 | Fall | ME | UWC | Viktor Lagutov |
| UWC5020 | Introduction to Geospatial Data Visualization II | 2 | Fall | ME | UWC | Viktor Lagutov |

Specialization in Political Science and Policy sample elective course list:

| Course code | Course Name | ECTS | Term | Type | Host dept. | Instructor |
|-------------|-----------------------------------------------|------|------|------|------------|-----------------|
| DOPP5078 | Impact Evaluation: Policy Applications with R | 4 | Fall | ME | DPP | Anand Murugesan |

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|----------|------------------------------------------------------------------------------|---|--------|----|------|--------------------|
| DOPP5360 | Applied Regression Analysis for Public Policy | 4 | Fall | ME | DPP | Ljubica Nedelkoska |
| DOPP5383 | Advanced Impact Evaluation | 4 | Winter | ME | DPP | Anand Murugesan |
| DOPP5384 | Big Data for Public Policy | 4 | Winter | ME | DPP | Mihály Fazekas |
| DOPP5664 | Microeconomics, Behavior and Public Policy | 4 | Fall | ME | DPP | Anand Murugesan |
| DOPP5665 | Macroeconomics for Public Policy | 4 | Winter | ME | DPP | Martin Kahanec |
| DSPS6570 | Domestic Politics in the Global Economy | 4 | Winter | ME | DSPS | Michael Dorsch |
| ECBS5138 | Data Analysis 1: Exploration - Economic Policy track | 4 | Fall | ME | DEB | Róbert Pál Lieli |
| ECBS5145 | Data Analysis 2: Finding Patterns with Regressions - Economic Policy Track | 4 | Fall | ME | DEB | Tímea Laura Molnár |
| POLS5194 | Social Media and Democracy | 4 | Fall | ME | DPS | Mariyana Angelova |
| POLS5814 | Introduction to Public Opinion, Political Communications, Political Behavior | 4 | Fall | ME | DPS | Gábor Simonovits |
| DNDS6032 | Data Science for the Sustainable Development Goals | 4 | Winter | ME | DNDS | Elisa Omodei |

Specialization in Applied Social Data Science sample elective course list:

| Course code | Course Name | ECTS | Term | Type | Host dept. | Instructor |
|-------------|----------------------------------------------------------------------------|------|--------|------|------------|--------------------|
| DNDS6023 | Social Networks 2 | 4 | Winter | ME | DNDS | Balázs Vedres |
| DNDS6032 | Data Science for the Sustainable Development Goals | 4 | Winter | ME | DNDS | Elisa Omodei |
| DOPP5384 | Big Data for Public Policy | 4 | Winter | ME | DPP | Mihály Fazekas |
| ECBS5138 | Data Analysis 1: Exploration - Economic Policy track | 4 | Fall | ME | DEB | Róbert Pál Lieli |
| ECBS5145 | Data Analysis 2: Finding Patterns with Regressions - Economic Policy Track | 4 | Fall | ME | DEB | Tímea Laura Molnár |
| ECBS5215 | Fintech in Depth | 4 | Winter | ME | DEB | Soomin Lee |
| ECBS5349 | Entrepreneurship and Innovation | 4 | Winter | ME | DEB | Andrea Kozma |
| ECBS6253 | Machine Learning for Natural Language Processing 1 | 4 | Spring | ME | DEB | Arieda Muco |
| ENVS5132 | Introduction to Geospatial Analysis | 6 | Winter | ME | DESP | Viktor Lagutov |

| | | | | | | |
|---------|--------------------------------------------------|---|------|----|-----|----------------|
| UWC5010 | Introduction to Geospatial Data Visualization I | 2 | Fall | ME | UWC | Viktor Lagutov |
| UWC5020 | Introduction to Geospatial Data Visualization II | 2 | Fall | ME | UWC | Viktor Lagutov |

Academic Writing Module (4 ECTS M)

| Course code | Course Name | ECTS | Term | Type | Host dept. | Instructor |
|-------------|------------------------------------------------|------|--------|------|------------|-----------------|
| CAW5044 | Academic Writing for MS in Social Data Science | 4 | Winter | M | CAW | Ágnes-Diós Tóth |

Seminar Module (4 ECTS ME)

| Course code | Course Name | ECTS | Term | Type | Host dept. | Instructor |
|-------------|----------------|------|--------|------|------------|------------|
| TBA | Thesis Seminar | 4 | Winter | M | DNDS | TBA |

Project Module (16 ECTS M)

| Course code | Course Name | ECTS | Term | Type | Host dept. | Advisor |
|-------------|--------------------|------|--------|------|------------|---------|
| TBA | Capstone project 1 | 4 | Winter | M | TBC | TBA |
| TBA | Capstone project 2 | 12 | Spring | M | TBC | TBA |

Free Elective Module (8 ECTS FE)

Two Free Elective (FE) courses shall be taken during the Fall Term. Students shall attain a total of 8 ECTS. To complete this module, elective courses at Master level from any academic programs at CEU can be taken. Students may make use of the obtained from ME courses taken beyond the minimum requirement to fulfill the FE requirement.

Contact:

Pr. Márton Karsai, CEU, Department of Network and Data Science
karsaim@ceu.edu

-- We reserve the rights for future changes of the listed courses. --