

MGT-581

**Introduction to econometrics**

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| Cursus                                            | Sem.     | Type |
|---------------------------------------------------|----------|------|
| Management of technology                          |          | Opt. |
| Management, Technology and Entrepreneurship minor | E        | Opt. |
| Managmt, tech et entr.                            | MA2, MA4 | Obl. |

|                            |                 |
|----------------------------|-----------------|
| Language of teaching       | English         |
| Credits                    | 4               |
| Session                    | Summer          |
| Semester                   | Spring          |
| Exam                       | Written         |
| Workload                   | 120h            |
| Weeks                      | 14              |
| <b>Hours</b>               | <b>4 weekly</b> |
| Courses                    | 2 weekly        |
| Exercises                  | 2 weekly        |
| <b>Number of positions</b> |                 |

**Summary**

The course provides an introduction to econometrics. The objective is to learn how to make valid (i.e., causal) inference from economic data. It explains the main estimators and present methods to deal with endogeneity issues.

**Content**

- Ordinary least square estimator
- Maximum likelihood estimator
- Instrumental variable
- Panel data
- Experiments and quasi-experiments

**Keywords**

Econometrics; Statistics; Data Analysis; Causality; Data Science

**Learning Prerequisites****Important concepts to start the course**

Sound understanding of statistics and probability concepts (central limit theorem, hypothesis testing, etc.)

**Learning Outcomes**

By the end of the course, the student must be able to:

- Recognize pitfalls and bias in data collection and econometric models
- Illustrate the concept of endogeneity
- Check the validity of an econometric result
- Quantify an economic relationship
- Design an appropriate regression model
- Interpret coefficients of econometric regressions

**Transversal skills**

- Demonstrate a capacity for creativity.

- Demonstrate the capacity for critical thinking
- Use both general and domain specific IT resources and tools

### Teaching methods

Lectures provide the theoretical knowledge and exercise sessions illustrate theory using computer exercises.

### Expected student activities

- Attendance and participation at lectures and exercise sessions
- Submission of problem sets

### Assessment methods

- Individual problem sets: 40%
- Written exam during the exam session : 60%

### Supervision

|              |     |
|--------------|-----|
| Office hours | Yes |
| Assistants   | Yes |
| Forum        | No  |

### Resources

#### Virtual desktop infrastructure (VDI)

No

### Bibliography

*The course will be based on (ref. not compulsory)*

- James H. Stock and Mark W. Watson, Introduction to Econometrics, Third Edition (Updated Edition), Pearson. ISBN: 978-0-13348687-2 (<http://www.isbnsearch.org/isbn/9780133486872>)

*Additional useful references:*

- Angrist, J.D. and Pischke, J.-S. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press, 2009.
- Cameron, A.C. and Trivedi, P.K. *Microeconometrics Using Stata*. Stata Press, 2010.
- Greene, W.H. *Econometric Analysis*. Prentice Hall, 2011.
- Wooldridge, J.M. *Introductory Econometrics: A Modern Approach*. Cengage Learning, 2012.

### Ressources en bibliothèque

- [Introduction to econometrics / Stock & Watson](#)
- [Introductory econometrics / Woolridge](#)
- [Mostly Harmless Econometrics / Angrist \(online\)](#)
- [Mostly Harmless Econometrics / Angrist \(print\)](#)
- [Econometric analysis / Greene](#)
- [Microeconomics using Stata / Cameron](#)

### Notes/Handbook

Students are provided with lecture slides.

**Moodle Link**

- <https://go.epfl.ch/MGT-581>