

COURSE SYLLABUS

Programming and Data Analysis, 5 credits

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Course Code: J2PADA	Education Cycle: Second-cycle level
Confirmed: Mar 30, 2026	Disciplinary domain: Natural sciences (90%) and Social sciences (10%)
Valid From: Aug 31, 2026	Subject group: Statistics
	Specialised in: A1N Second cycle, has only first-cycle course/s as entry requirements
	Main field of study: Statistics

Intended Learning Outcomes (ILO)

On completion of the course you will be able to:

Skills and Abilities

2.2: Issues using theories and data and justifying solutions with rigorous, evidence-based reasoning.

3.1: Produce well-structured, professional materials that demonstrate academic proficiency and adapt style and terminology to the target audience.

Judgement and Approach

5.2: Appraise relevant emerging trends and technologies to formulate strategies and decisions for applying innovations in practice or in advanced problem solving.

Content

The ability to manage and analyse large and complex datasets is an essential skill for economists and business professionals. This course gives you the foundational programming and data management skills needed to work effectively in modern analytical environments. It will help you build a practical toolkit that supports both your academic work and future professional development. During the course, Python is used as the main analytical environment. You will learn fundamental programming concepts and how to import, clean, transform, merge, and structure data, as well as perform database queries exploratory analysis. Practical applications and hands-on exercises are central part of the course. The course also introduces the efficient use of Generative AI and digital tools to support programming and analytical workflows. After completing the course, you will be able to translate economic and business questions into structured analytical tasks, write basic programs in Python, prepare datasets, and apply descriptive and graphical methods to analyse real-world data. You will have a versatile skill set that prepares you for further studies in econometrics, empirical research, and applied data analysis in economics and business.

Connection to Research

The course is research-linked in several ways. First, it introduces you to the computational and data-management practices that underpin contemporary empirical research in economics, finance, and related social sciences. You will work with research-style datasets and learn how transparent workflows, reproducible notebooks, careful documentation, and critical interpretation support rigorous academic work. Second, the course prepares you for more advanced courses in econometrics, applied economics, and thesis work by strengthening your ability to organise and evaluate empirical material before formal modelling.

Connection to Practice

The course is strongly practice-oriented. You work hands-on with realistic datasets and complete tasks that resemble analytical work in business, policy, and consulting settings: cleaning messy data, combining

sources, producing visual summaries, documenting workflows, and communicating results for decision-making. The emphasis on reproducible notebooks, visual communication, and structured problem-solving mirrors professional practice in data-driven organisations. The course therefore supports employability in roles that require analytical reasoning and practical data capability.

Connection to Ethics, Responsibility, Sustainability (ERS)

Ethics, responsibility, and sustainability are embedded in the course through content. You are taught to reflect on data quality, transparency, reproducibility, and responsible interpretation of analytical results. After completing the course, you are able to discuss ethical risks linked to data work, including bias, selective reporting, misuse of visualisations, opacity in analytical choices, and the responsible use of generative AI tools. Sustainability and broader societal relevance are addressed through the choice of examples and datasets, such as inequality, labour markets, prices, and other policy-relevant economic topics.

Type of Instruction

The course is taught on campus through lectures, computer labs, workshops, and seminars. It includes both individual and group-based learning activities. Teaching emphasises learn-by-doing with guided coding exercises. Active participation is expected throughout the course, and attendance may be compulsory in selected workshops.

Attendance is expected for scheduled on-campus sessions and may be compulsory for some sessions.

Language of instruction is English.

Entry Requirements

The applicant must hold the minimum of a Bachelor's degree (i.e. the equivalent of 180 ECTS credits at an accredited university). Also, a minimum of 15 ECTS in mathematics, statistics and/or econometrics is required. Proof of English proficiency is required.

Examination and Grades

The course is graded Pass (G) or Fail (U).

ILOs are assessed through the following examination forms:

Group coding assignments (ILOs: 2.2, 3.1, 5.2), representing 2 credits. Assessment is based on workshops with written and oral presentations covering the full process from data collection to data analysis.

Individual project work (ILOs: 2.2, 3.1, 5.2), representing 3 credits. Assessment is based on an on-campus written data analysis project, in which students individually carry out the full process from data collection to data analysis.

All parts of the compulsory examination in the course must receive a passing grade before a final grade can be set. Grades are set in accordance with JIBS grading policy.

Registration of examination:

Name of the Test	Value	Grading
Group coding assignments	2 credits	G/U
Individual project work	3 credits	G/U

Course Evaluation

The course evaluation is important for the continuous improvement of JIBS' courses and degree programmes. The examiner is responsible for ensuring that each course is evaluated, but as a student you are essential in this process. We rely on your input to understand how we can improve. At the outset of a course the student representatives are identified. In the middle of the course there should be an opportunity for the student representatives (or a larger group of students) to share reflections on how the course is progressing. At the end of the course, you will get a course evaluation survey to fill in. The

examiner will then host a debrief meeting with the student representatives to discuss improvement opportunities, based on the course evaluation data and comments.

Other Information

As a JIBS student, you are expected to maintain strong academic integrity. You must act within the boundaries of academic rules and expectations relating to all types of teaching and examination.

Copying someone else's work is a particularly serious offence and can lead to disciplinary action. When you use someone else's work without proper citation or transparency about where it came from, you are committing plagiarism. Cutting and pasting without clearly acknowledging the original source is a textbook example of plagiarism.

You must also act responsibly when using Generative AI tools. Acting responsibly includes staying informed about the school's AI-policy, understanding what rules apply in each course, and properly declaring or disclaiming any use of generative AI. You are accountable for all content you submit, including AI-assisted material. Using AI without disclosure or beyond what is allowed in a course is a violation of academic integrity and will be subject to the same academic consequences as other forms of misconduct, which may include failing the assignment, failing the course, or further disciplinary action according to school policy.

The Jönköping University library offers online and in-person support for assisting you in identifying relevant sources, using and referencing literature, and creating texts that meet academic standards and integrity.

Other forms of academic misconduct include (but are not limited to) adding your name to a project you did not contribute to (or allowing someone to add their name), cheating during an examination, helping other students to cheat or submitting other students' work as your own, and using non-allowed electronic equipment during an examination. All such actions may result in disciplinary measures.

Course Literature

Please note that the course literature may be revised up to eight weeks before the start of the course.

Literature provided at the start of the course.