



DevOps: Continuous Development, Integration and Delivery

DevOps: kontinuerlig utveckling, integration och leverans

7.5 credits

Ladok Code: C1DOIA

Version: 1.0

Established by: Committee for Education in Librarianship, Information, and IT 2025-11-28

Valid from: Spring 2026

Education Cycle: First cycle

Main Field of Study (Progressive Specialisation): Informatics (G1F), Computer Science (G1F)

Disciplinary Domain: Natural sciences

Prerequisites: General entry requirements and completed courses in Information Systems and Data 7.5 credits, Object-Oriented Programming in C# 7.5 credits, Database Technology for Software Developers 7.5 credits, or equivalent.

Subject Area: Informatics/Computer and Systems Sciences

Grading Scale: Seven-degree grading scale (A-F)

Content

The course introduces techniques and principles of DevOps—a methodological approach aimed at integrating and optimizing collaboration between development and operations teams. DevOps focuses on increasing efficiency and system management by combining agile methods with automation, continuous delivery, and monitoring. The course emphasizes how DevOps enables faster and more reliable software delivery by automating and structuring processes for development, testing, deployment, and monitoring.

Students will gain knowledge of core DevOps concepts and how these affect the entire pipeline from development to production. The course offers a blend of theoretical understanding and practical application, enabling students to apply DevOps principles in real-world scenarios and establish a stable and effective DevOps practice within an organization. The course focuses on the following main areas:

- DevOps Fundamentals
- Automation and Tools
- DevOps Principles and Lifecycle
- Practical Challenges and Success Factors
- Practical Application

Learning Outcomes

After completing the course, the student should be able to:

Knowledge and Understanding

- 1.1 Explain DevOps as a methodological approach, including its theories and fundamental concepts,
- 1.2 Account for DevOps principles, including their advantages and disadvantages,
- 1.3 Describe and analyze techniques and tools used in DevOps, such as Continuous Integration (CI), Continuous Delivery (CD), and containerization,
- 1.4 Demonstrate understanding of how DevOps principles affect the entire development and delivery chain, from development to production,

Competences and Skills

- 2.1 Develop and demonstrate practical ability to use containerization for creating and managing environments for development, testing, and production,
- 2.2 Design and document a continuous delivery pipeline using tools and processes for CI and CD
- 2.3 Present a continuous delivery pipeline using tools and processes for CI and CD,
- 2.4 Manage development environments and troubleshoot using tools employed in DevOps to ensure a stable and efficient delivery process,

Judgement and Approach

- 3.1 Critically evaluate and argue for the choice of tools and environments in DevOps, considering factors such as scalability, collaboration, automation and
- 3.2 Reflect on and discuss practical challenges and success factors affecting the adoption and implementation of a DevOps culture in an organization.

Forms of Teaching

The course consists of:

- Lectures
- Workshops
- Supervision
- Seminaris

The language of instruction is English.

Forms of Examination

The course will be examined through the following examination elements:

Exam

Learning outcomes: 1.1 - 1.4, 3.2

Credits: 3

Gradingscale: Seven-degree grading scale (A-F)

Project: Development of a cloud-native microservice application at a cloud provider according to good DevOps principles

Learning outcomes: 2.1, 2.2, 2.4, 3.1, 3.2

Credits: 4

Gradingscale: Fail (U) or Pass (G)

Seminar: Presentation of a cloud-native microservice application

Learning outcomes: 2.3, 3.1, 3.2

Credits: 0.5

Gradingscale: Fail (U) or Pass (G)

For a passing grade (A-E) on the entire course, the grade E at a minimum is required on the Individual written examination and Pass (G) on the other examination components. A higher grade on the whole course is then determined by the grade on the Individual written exam.

If the student has received a decision/recommendation regarding special pedagogical support from the University of Borås due to disability or special needs, the examiner has the right to make accommodations when it comes to examination. The examiner must, based on the objectives of the course syllabus, determine whether the examination can be adapted in accordance with the decision/recommendation.

Student rights and obligations at examination are in accordance with guidelines and rules for the University of Borås.

Literature and Other Teaching Materials

The course literature consists of lecture notes and is in English.

Davis, Ashley. (2024 or later edition). Bootstrapping Microservices, Second Edition: With Docker, Kubernetes, GitHub Actions, and Terraform. Manning.

Davis, Jennifer and Daniels, Ryn. (2016 or later edition). Effective DevOps: building a culture of collaboration, affinity, and tooling at scale. O'Reilly Media, Inc.

Scientific articles and additional lecture material may be added as instructed by the teacher.

Student Influence and Evaluation

The course is evaluated in accordance with current guidelines for course evaluations at the University of Borås in which students' views are to be gathered. The course evaluation report is published and returned to participating and prospective students in accordance with the above-mentioned guidelines, and will be taken into consideration in the future development of

courses and education programmes. Course coordinators are responsible for ensuring that the evaluations are conducted as described above.

Miscellaneous

The course is given as a freestanding course.

This syllabus is a translation from the Swedish original.