



Distributed Applications (BCS) (B-UCLL-MBI48J)

6 ECTS English First term Cannot be taken as part of an examination contract

Van Impe Bram (coordinator) | Van Impe Bram

POC PBA Toegepaste informatica (Leuven)

Aims

DLR 3. The professional bachelor TI designs, builds, documents and tests quality IT solutions.

- The student knows what a distributed application is.
- The student can clearly explain why distributed applications are complex.
- The student can apply techniques to split a centralized application into functional modules.
- The student can apply different patterns to allow modules in a distributed application to communicate.
- The student can deliver a robust distributed application by combining different appropriate testing techniques.

DLR 6. The professional bachelor TI critically researches and evaluates existing and innovative IT solutions.

- The student has an understanding of different architectural techniques used within distributed applications.

Previous knowledge

- Being able to program in Java
- Being able to work with Spring
- Being able to work with containers (docker)
- Working with a relational database
- Working with a version control system such as git
- Knowledge of front-end technologies and frameworks
- Knowledge of communication over HTTP

Identical courses

This course is identical to the following courses:

MBI27H : Distributed Applications

Is included in these courses of study

[Courses for Exchange Students - Technology \(Leuven\)](#)

[PBA Applied Computer Science \(Leuven\)](#) 180 ects.

Activities

6 ects. **Distributed Applications (BCS) (B-UCLL-MBI48j)**

6 ECTS English **Format: Lecture-practical-assignment** First term

Van Impe Bram

POC PBA Toegepaste informatica (Leuven)

Content

- What is a distributed application?
 - From "monolith" to "microservices"
 - Fallacies of distributed computing
 - Coupling

- 4 + 1 architecture model & architectural styles
- Hexagonal architecture
- Functional decomposition
 - Service & API
 - Strategies for decomposition
- Communication patterns
 - Synchronous communication
 - Asynchronous communication
- Architectural patterns
 - Domain events
 - Saga
 - Distributed queries
 - CQRS
 - API gateway
- Testing distributed applications
 - Full test pyramid
 - Contract testing
- Case studies

Course material

Basic study material is the book "Microservices Patterns" by Chris Richardson.

Supporting materials, powerpoints and exercises are provided through Toledo.

Format: more information

Explanation of the work format used in this course is shared on Toledo under section Course information.

Evaluation

Distributed Applications (BCS) (B-UCLL-M83839)



Type : Continuous assessment without exam during the examination period

Description of evaluation : Paper/Project, Project/Product, Presentation

Type of questions : Open questions

Explanation

Assessment	Grading scale
TOTAL	1-20/20 scale

Points to obtain: 20

- 4 points on an assignment to reflect on real-life cases
- 16 points on coding and defending a project during the course

Further explanation on the evaluation of this course unit is shared on the Toledo course under section "About the evaluation / About the evaluation".

Information about retaking exams

Points to obtain: 20

- 4 points on an assignment reflecting on real-life cases
- 16 points on coding and defending a project

Further explanation on the evaluation of this course unit is shared on the Toledo course under section "About the evaluation / About the evaluation".

 Required in stage	 Optional in stage	 First term	 Second term	 Both terms
 This year	 Next year	 Alternating years	 External	 Prerequisites
 Taught by	 Language of instruction	 Duration		