English-taught programme for incoming exchange students at the School of IT and Digital Innovation

Programme Applied Information Technology

2021-2022

Please find below a short description of our International Curriculum for the academic year 2021-2022.

This draft contains the description of the course contents and te prerequisites. The description of the tracks still have to be completed.

The full description will soon be available on our website: International Curriculum Applied Information Technology

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
1

Autumn semester

We offer 4 different tracks in our international programme:

INT-IT: Mobile and Enterprise Developer

Course	ECTS
Mobile Application Development Android	4
Enterprise Web Development: C#	6
Database Programming	3
DevOps Project: Development Project II*	8
Choose courses out of:	
Mobile Application Development iOS	3
E-marketing	3
Survival Dutch	3
Belgian Cultural studies	3
Cross Cultural Communication	3
Entrepreneurship	3

*: the course 'DevOps Project: Development Project II' can only be selected in combination with 'Mobile Application Development Android', 'Enterprise Web Development: C#' and 'Database Programming'.

INT-IT: System and Network Administrator

Course	ECTS
Windows Server II	4
Infrastructure Automation	3
Computer Networks IV	3
Cybersecurity Advanced	3
DevOps Project: Operations Project II*	8
Choose courses out of:	
E-marketing	3
Survival Dutch	3
Belgian Cultural studies	3
Cross Cultural Communication	3
Entrepreneurship	3

*: the course 'DevOps Project: Operations Project II' can only be selected in combination with 'Cybersecurity Advanced', 'Computer Networks IV', 'Windows Server II' and 'Infrastructure Automation'.

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts

2

INT-IT: Data Engineer

Course	ECTS
Database Programming	3
Infrastructure Automation	3
Business Intelligence	3
Distributed Databases	4
Data Engineering Project II*	8
Choose courses out of:	
E-marketing	3
Mobile Application Development iOS	3
Survival Dutch	3
Belgian Cultural studies	3
Cross Cultural Communication	3
Entrepreneurship	3

*: the course 'Data Engineering Project II' can only be selected in combination with 'Database Programming', 'Business Intelligence', 'Distributed Databases' and 'Infrastructure Automation'.

INT-IT: Functional and Business Analyst

Course	ECTS
Business Processes Advanced	6
Content Management Systems	3
ERP System Configuration	4
Project E-Business*	8
Choose courses out of:	
Mobile Application Development iOS	3
E-marketing	3
Survival Dutch	3
Belgian Cultural studies	3
Cross Cultural Communication	3
Entrepreneurship	3

*: the course 'Project E-Business' can only be selected in combination with 'Business Processes Advanced', 'ERP System Configuration' and 'Content Management Systems'.

After discussion with the International Coordinator of Applied Information Technology, individual changes can be made in the proposed tracks.

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts

3

TRACK 1

MOBILE AND ENTERPRISE DEVELOPER

Description to be completed

Mobile Application Development Android: link naar studiefiche

Prerequisites

Intermediate knowledge of object oriented programming principles is required. No prior Kotlin knowledge is expected, although proficiency in at least one computer programming language is advised.

Content:

Kotlin

Activities, Fragment and all other existing Android user interface elements

Android APIs

Persistence of data within the application

All current common design patterns and techniques typical of Android

REST clients (Retrofit, Volley ...) and connection to the internet

Mobile Android application

Enterprise Web Development C#: link naar studiefiche

Prerequisites

Intermediate knowledge of object oriented and functional programming principles is required. No prior C# knowledge is expected, although proficiency in at least one computer programming language is advised.

Content:

Programming in C#

ASP.NET Core 5

Blazor

Architecture

Unit Tests

Integration Tests

Persistence

Authentication and authorization

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
4

Best practices

Database Programming: link naar studiefiche

Prerequisites

The student should be able to program in at least one procedural programming language, preferably Python.

The student should have a profound knowledge of relational databases and SQL.

Content

NoSQL Databases

In memory databases

Use of database APIs

Advanced database performance

Devops Project: Development*: link naar studiefiche

*: the course 'DevOps Project: Development Project II' can only be selected in combination with 'Mobile Application Development Android ', 'Enterprise Web Development: C#' and 'Database Programming'.

Prerequisites

Basic knowledge of git and working in an agile team (SCRUM / kanban / ...).

Content

Steps to follow in the development of a robust application (reliable, user-friendliness, functionally complete, expandable and maintainable) using SCRUM:

- Determining functional and non-functional requirements
- Preparation of analysis (scope, product backlog, sprint backlog, user stories, use cases and use case diagram)
- Integration from analysis to design
- Integration from design to development
- Integration with a more complex database

Application development and delivery:

- Analysis: drawing up the necessary analysis documentation
- Design and mock-up
- Back-end design according to the most common best practices
- Application: user-friendly, responsive, reliable, functionally complete, expandable, maintainable, scalable

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
5

- Efficient use of frameworks, design patterns
- Integration with more complex database
- Document the code
- Testing (drawing up the most efficient functional test scenarios for the customer or end user
- Processing the test result. -Unit tests -Integration tests - ...)
- Use the most efficient frameworks

Supplied documentation:

- Functional analysis: domain model, product backlog (use cases or user stories)
- Non-functional needs: listing, documented with mock-ups
- Functional test plan
- Class diagram
- Documentation code

Version control system (multiple versions)

Working / production worthy software demonstration (sprint demos) and commercial presentation

Function as a group and as an individual in the group:

- Use of a version control system
- Sprint planning and organization
- Professional conduct
- Result and quality oriented
- Creativity
- Dealing with feedback
- To reflect

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
6

TRACK 2

FUNCTIONAL AND BUSINESS ANALYST

Description to be completed

Business Processes Advanced: link naar studiefiche

Prerequisites

Business processes & modelling, introduction ERP

Basic understanding of financial processes (costing)

Content:

Basic processes in ERP

Basic processes in CRM

Basic processes in SCM (Supply Chain management) and Production planning

Basic processes in Manufacturing execution processes

Business reporting

Content Management Systems: link naar studiefiche

Prerequisites

This course requires basic web development knowledge (HTML/CSS). Knowledge of PHP is a plus but not mandatory.

Content:

Designing and day-to-day management of a website using a CMS

Adjusting and using existing modules and writing new modules in a CMS

Adjusting the layout in a CMS based on theming

Create and modify a webshop

Using PHP for a CMS

ERP System Configuration: link naar studiefiche

Prerequisites

Introduction ERP , business processes management

Basic understanding of financial processes (costing)

SAP: Basic architecture and concepts

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts

7

Programming in SAP (modular programming, exits, Z tables, Z transactions, Back-end development in ABAP)

Content:

Customising of basic processes in SAP ERP:

- Finance (FI) and controlling (CO)
- Material management (MM)
- Sales & distribution (SD)
- Production Planning (PP)

Project E-Business*: link naar studiefiche

*: the course 'Project E-Business' can only be selected in combination with 'Business Processes Advanced', 'ERP System Configuration' and 'Content Management Systems'.

Prerequisites

This course requires a basic knowledge of an agile methodology (Scrum, Kanban,…). You can work with a version control system (git).

Content:

Analysis of the business model for the assignment using an Osterwalder Business canvas

Recording functional and non-functional requirements

- Drafting/adjusting analysis based on customer Journey's, story map, user stories•
- Analysis of key processes
- Analysis of the application architecture

Application design, development and delivery

- Design of an integrated application based on Drupal (Webshop/CMS) and/or
- SAP and/or BI (at least 2 technologies
- Integration of analysis to configuration and development
- - Integration with other E-Business solutions (Drupal, SAP, BI, Custom)
- Analysis: Drafting/adjusting the necessary analysis documentation
- User-friendly and responsive application (development and delivery)
- Expandable, generic, scalable and maintainable
- Configuration of a database
- Testing (for customer or end user)
- Making the application available online
- Design of reporting by BI

Completed Documentation:

- Osterwalder Business Canvas
- Customer Journey
- Architecture

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
8

- Customer Documentation
- Design of reporting by BI

Version control system (multiple versions)

- Use of a version management system

Teamwork, group functioning and individual in the group

- Medium-term planning and organisation
- Organisation and punctuality
- Courtesy
- Result and quality orientation
- Creativity
- Handling Feedback
- Reflect

Application Demonstration (Sprint demos) and presentation

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts

9

TRACK 3

SYSTEM AND NETWORK ADMINISTRATOR

Description to be completed

Windows Server II: link naar studiefiche

Prerequisites

Basic knowledge about Windows Server system administration: Installation, configuration & security settings, assigning roles (e.g. IIS, DNS, DHCP, SharePoint, ...), Active Directory, SqlServer, PowerShell.

Content:

Windows server – expert

Developing a realistic business solution, consisting of:

- Redundant domain controllers
- System for deploying images based on MDT and SCCM
- MS SQLServer
- Mail server (MS Exchange 2016)
- Certificate server

Automate the automatic rollout of the created setup via PowerShell

Infractructure Automation: link naar studiefiche

Prerequisites

Intermediate Linux system administration skills: installation, configuration & security settings, managing files and directories, I/O redirection, text processing with filters, users/groups/permissions, installing & configuring network services (DNS, DHCP, web, database, Samba), troubleshooting, shell scripting.

Content:

Learning to work with tools for automating the lifecycle of a (virtual) server: provisioning, configuration management, package management, container virtualization and orchestration

Logging and Monitoring

Computer Networks IV: link naar studiefiche

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
10

Prerequisites

You are Cisco CCNA certified, or have completed and passed the final exams for all parts of the CCNA programme.

Content:

Cisco Enterprise Networking, Security, and Automation v7.02 (ENSA):

- Network Security
- WAN Concepts
- Optimize, Monitor and Troubleshoot Networks
- Emerging Network Technologies

Cisco CCNP Enterprise Advanced Routing and Services v8 (ENARSI)

- Capita selecta (including EIGRP, OSPF and BGP)

Cybersecurity Adavanced: link naar studiefiche

Prerequisites

Intermediate cybersecurity skills: basic concepts (Confidentiality, Integrity, Authorisation, Availability, ...), cryptographic methods (symmetrical and asymmetrical encryption, hashing) and their applications (key pairs, certificates, digital signatures, password storage, methods for exploiting vulnerabilities, tools for forensic investigation, reconnaissance and attacks (Kali, metasploit, etc.), network traffic monitoring and analysis (Wireshark, tcpdump).

Content:

End device hardening & security

Firewall: configuration, auditing & IDS / IPS

Network Risk & Vulnerability Management

Security Policy Design and implementation

Devops Project: Operations*: link naar studiefiche

*: the course 'DevOps Project: Operations Project II ' can only be selected in combination with 'Cybersecurity Advanced ', 'Computer Networks IV', 'Windows Server II' and 'Infrastructure Automation'.

Prerequisites

Intermediate Windows and Linux System Administration skills: setting up secure network services (web, database), automating system administration tasks

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts

11

Content:

Be part of an interdisciplinary team and provide support from the expertise of system and network management

- Devops
- Site Reliability Engineering
- Release Engineering
- To test

Project management and acting professionally

- Advisory meetings
- Agile Development Strategies – Scrum
- Short and medium term planning based on development method and organization (including test plan execution tests)
- Organization and punctuality
- Professional conduct
- Result and quality orientation
- Creativity
- Dealing with feedback
- To reflect
- Teamwork; Individual in the group; Group functioning

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
12

TRACK 4

DATA ENGINEER

Description to be completed

Database programming: link naar studiefiche

Prerequisites

The student should be able to program in at least one procedural programming language, preferably Python.

The student should have a profound knowledge of relational databases and SQL.

Content:

NoSQL Databases

In memory databases

Use of database APIs

Advanced database performance

Infrastructure Automation: link naar studiefiche

Prerequisites

Intermediate Linux system administration skills: installation, configuration & security settings, managing files and directories, I/O redirection, text processing with filters, users/groups/permissions, installing & configuring network services (DNS, DHCP, web, database, Samba), troubleshooting, shell scripting.

Content:

Learning to work with tools for automating the lifecycle of a (virtual) server: provisioning, configuration management, package management, container virtualization and orchestration

Logging and Monitoring

Business Intelligence: link naar studiefiche

Prerequisites

The student should have a profound knowledge of relational databases and SQL.

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
13

Content:

BI and ETL

Datamanagement

Business reporting

Distributed Databases: link naar studiefiche

Prerequisites

The student should be able to program in at least one programming language, preferably Python.

The student should have knowledge of relational databases and SQL.

The student should have some basic statistical knowledge, e.g. about linear regression.

Content:

Classic supervised learning algorithms

Image processing and natural language processing

Determine measures for the accuracy of a model

Rolling out a model in a production environment

Big Data tools

Data Engineering Project II*: link naar studiefiche

*: the course 'Data Engineering Project II' can only be selected in combination with 'Database Programming ', 'Business Intelligence', 'Distributed Databases' and 'Infrastructure Automation'.

Prerequisites

No additional prerequisites.

Content:

Setting up a data warehouse and associated BI dashboards based on requirements:

- Design and implement data warehouse
- Design and implement ETL pipeline
- Design and implement a reporting environment

Supplied documentation:

- Design of the data warehouse
- Design of the ETL pipeline

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
14

- Report usage manual

Function as a group and as an individual in a group:

- Use of a version control system
- Sprint planning and organization
- Professional conduct
- Result and quality oriented
- Creativity
- Dealing with feedback
- To reflect

Interim demos and presentation

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
15

OPTIONAL COURSES (School of IT and Digital Innovation)

You can choose courses out of:

E-Marketing: link naar studiefiche

Prerequisites

No other study courses required to follow this course.

Content:

Kottler introduction marketing (7P).

Google Digital Marketing Academy (DMA)

A digital marketing platform in 100 days (Bert Van Wassenhove)

Digital and mixed marketing channels, cross marketing

Possibilities of e-mail marketing, apply correct dosage and correct links

Link Facebook, Pinterest, Linkedin Associations, Twitter, with e-marketing

Customer project marketing plan prospected by student

Google Digital Marketing Academy. Google Analytics + own analytics dashboard

How to optimize the site for the search engines and how to add appropriate ads

Creativity, examples of excellent e-marketing campaigns, guest speakers

Mobile Application Development iOS*: link naar studiefiche

*: for this course, you need a laptop (MacBook air of MacBook Pro) with the iOS operating system. A Apple laptop with a M1-chip is NOT sufficient.

Prerequisites

Advanced knowledge of software development using a higher-level programming language (Java, C#, ...).

Content:

The Swift programming language.

The Xcode IDE. MVC, auto layout and adaptive UI.

Views and controllers for navigation, structure, tables and collections.

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts

16

Spring semester

We offer 2 tracks:

INT-IT: Web Development

Course	ECTS
Advanced Software Development II	4
Enterprise Web Development: Java	4
Software Development Project II*	8
Choose courses out of:	
Research Methods	4
Data Science & AI	4
IT2Business	4
Survival Dutch	3
Belgian Cultural studies	3
Cross Cultural Communication	3

*: the course 'Software Development Project II' can only be selected in combination with 'Advanced Software Development II' and 'Enterprise Web Development: Java'.

INT-IT: ERP Development

Course	ECTS
Software Development in ERP I	4
Software Development in ERP II	4
Business Software Project*	8
Choose courses out of:	
Research Methods	4
Data Science & AI	4
IT2Business	4
Survival Dutch	3
Belgian Cultural studies	3
Cross Cultural Communication	3

* the course 'Business Software Project' can only be selected in combination with 'Software Development in ERP I' and 'Software Development in ERP II'.

After discussion with the International Coordinator of Applied Information Technology, individual changes can be made in the proposed tracks.

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts

17

TRACK 1

WEB DEVELOPMENT

Description to be completed

Advanced Software Development II: link naar studiefiche

Prerequisites

Intermediate knowledge of Java programming is required. (including Generics / Streams / ...). Basic understanding of design patterns is required.

Content:

Complex design patterns

Multithreading

Optionally an advanced object-oriented programming topic (to be determined)

Enterprise Web Development Java: link naar studiefiche

Prerequisites

Intermediate knowledge of Java programming is required. (including Generics / Streams / ...). Basic understanding of design patterns is required. Basic html knowledge is required.

Content:

Spring framework for developing an enterprise web application

Client / server architecture

Security aspects

JPA

Link with JPA framework, web services, etc

Software Development Project II*: link naar studiefiche

*: the course 'Software Development Project II' can only be selected in combination with 'Advanced Software Development II' and 'Enterprise Web Development: Java'.

Prerequisites

No additional prerequisites.

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
18

Content:

Steps to follow in the development of a robust application (reliable, user-friendly, functionally complete, expandable and maintainable) using SCRUM:

- Drafting / adapting functional analysis (application functionalities, application scope, non-functional requirements, prioritization according to customer demand)
- Integration from analysis to design
- Integration from design to development
- Integration with a more complex database

Version control system (multiple versions)

Application development and delivery:

- Analysis: drawing up and completing functional needs (use cases), scope determination (use
case diagram), desired user interface (mock-up)
- Design: Class diagram based on domain model
- Application: as functionally described, meeting non-functional needs (user-friendly, reliable, expandable and maintainable)
- Make correct use of frameworks, design patterns
- Integration with complex database
- Document the code
- Testing (acceptance tests, drawing up functional test scenarios, processing the test result, unit
tests)

Supplied documentation:

- Use case diagram
- Use cases - mock-up
- Class diagram

Functioning as a group and as an individual in a group (applying SCRUM)

- Sprint planning and organization
- Professional conduct
- Result and quality oriented
- Creativity
- Dealing with feedback
- Reflect (retrospective)

Application demonstration (sprint demos) and presentation

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
19

TRACK 2

ERP DEVELOPMENT

Description to be completed

Software Development in ERP I: link naar studiefiche

Prerequisites

This course requires basic programming knowledge (any language which uses datatypes (int, string, arrays)) and a basic SQL knowledge. A basic understanding of webservices is a plus.

Content:

Basic architecture and concepts of SAP (client, company code, transport, ...)

Programming in ABAP

Back-end development in ABAP

Modular programming in SAP

Exits, Z tables, Z transactions

Software Development in ERP II: link naar studiefiche

Prerequisites

This course requires javascript (ECMAScript 5) and HTML knowledge.

Content:

Front-end development in Fiori

Developing services

SAP web service

Business Software Project*: link naar studiefiche

* the course 'Business Software Project' can only be selected in combination with 'Software Development in ERP I' and 'Software Development in ERP II'.

Prerequisites

This course requires a basic knowledge of an agile methodology (Scrum, Kanban,…).
You can work with a version control system (git).

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
20

Content:

Application development in ERP

Short and medium term planning based on development method and organization (including test plan execution tests)

Agile Development Strategies – Scrum

To test

Version control system (multiple versions)

- use of a version control system

Professional conduct

Teamwork, group functioning and individual in the group

- medium term planning and organization
- organization and punctuality
- politeness
- result and quality orientation
- creativity
- dealing with feedback
- to reflect

Application demonstration (sprint demos) and presentation

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
21

OPTIONAL COURSES (School of IT and Digital Innovation)

You can choose courses out of:

Research Methods: link naar studiefiche

Prerequisites

This course prepares you to write an undergraduate (Bachelor) thesis in applied computer science. You don't need any specific prior knowledge to follow this course, but you are expected to have an IT background and to be proficient in English.

Content:

This course prepares you for the Bachelor thesis. You will learn to:

- Formulate a research question
- Conduct a literature review
- Apply appropriate research methods
- To write a report about research

Data Science and AI: link naar studiefiche

Prerequisites

The student should be able to program in at least one programming language, preferably Python.

The student should have some basic mathematical knowledge so that simple mathematical formulas can be interpreted.

Content:

Basic rules of probability theory.

Tables, graphs, measures, indices, probabilities, probability variables, probability distributions, samples, statistical modeling, estimation, sample length and reliability of statements, hypothesis tests, time series (trends), regression, correlation

Perform statistical analysis using Python

IT2Business: link naar studiefiche

Prerequisites

Understanding business processes.

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
22

Content:

The role of ICT in a company.

The gap between ICT and business – how can this gap be bridged?

The ITIL framework

The concept service Level agreement

Processes: incident management, change management, problem management, service management

Most important business processes

What is a project, what are the objectives of project working?

Business Model Canvas

Introduction in BPMN and process modeling

Advantages and disadvantages of an ERP, CRM

Introduction in SAP

Basic processes in SAP ERP and CRM

Architecture and integration capabilities of SAP

International Curriculum Applied Information Technology 2021-2022
School of IT and Digital Innovation
HOGENT University of Applied Sciences and Arts
23