

Bachelor ICT Exam year

Februari 2021



Exchange students

- ▶ welcome in the Netherlands!

Semester 7: ICT & Technology

Technology-semester with Dutch students

Semester 7: ICT & Software + Business

A. mandatory subjects (9 ECTS)

- ▶ ProEp : 7 ECTS (semester)
- ▶ Trends & Hypes: 2 ECTS (semester)

B. electives (choose 7 courses (each course is 3 ECTS))

- ▶ see list on next slide
- ▶ your choice is based on:
 - a. what you like / what is valuable for your career
 - b. your capabilities
 - c. what fits in your schedule

electives

business

BEC1 BEC2 (prerequisites: BEC1)
IT-AU BIA
ITOPS DWH
QP MOT
CT EBUS
SD3 SD4

software

IPV1 IPV2 (prerequisites: IPV1)
SOT SAI (prerequisites: SOT)
ALE1 ALE2
ANDR1 ANDR2
WEB2 WEB3
UID MATH3
TCI EDB4
PRC1 PRC2 (prerequisites: PRC1)
SePr

check yourself:

course may *not* be a duplicate
of 2nd year/specialization

schedule

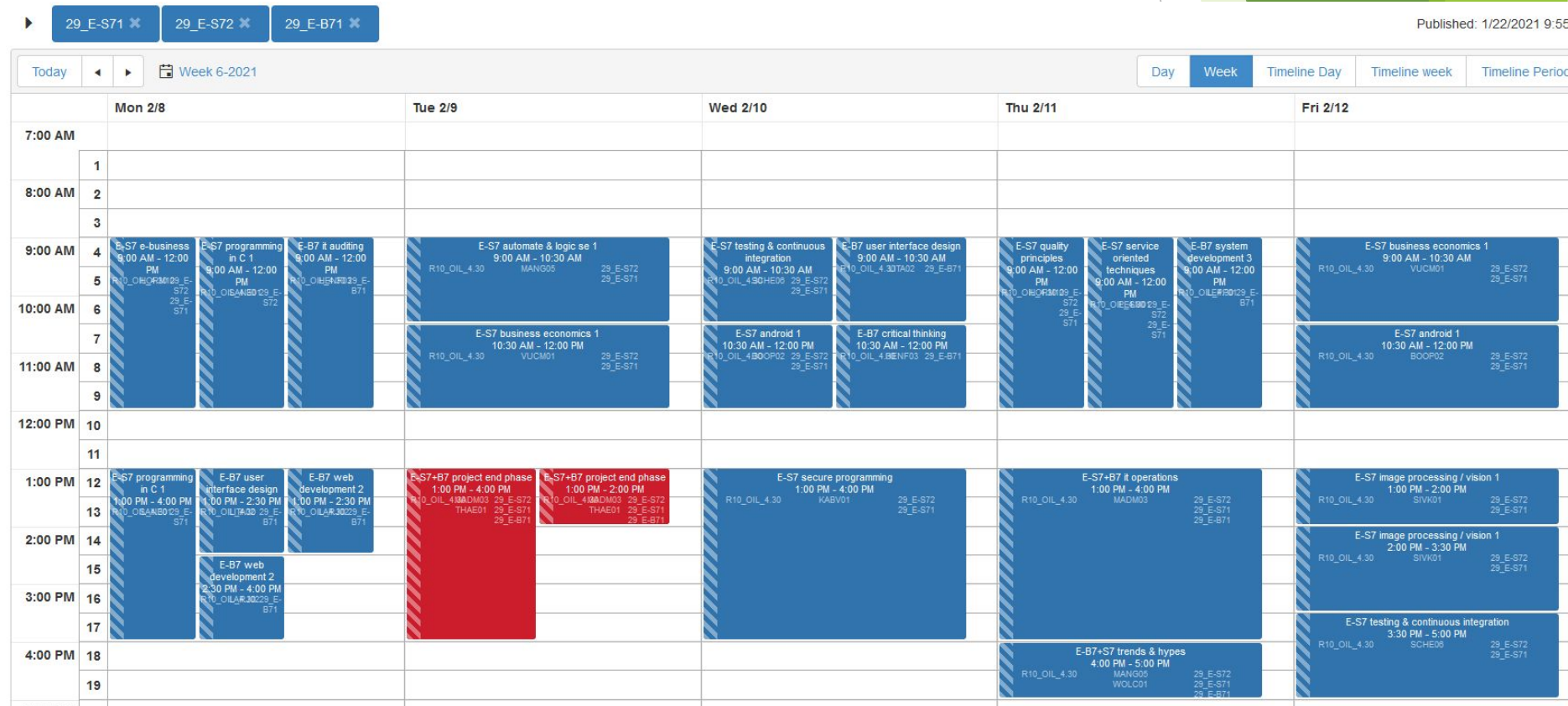
▶ <https://sa-fontys.xedule.nl/>

▶ selects Groups:

▶ 29_E-S71

▶ 29_E-S72

▶ 29_E-B71



on-line vs. on-campus

- ▶ week 1: on-line
- ▶ on-line until further notice
- ▶ when on-campus:
 - ▶ location: 4.30
 - ▶ separate announcements will be made
 - ▶ blended-learning
 - ▶ rules



Enrollment procedure

- ▶ enrollment via Canvas/MS Teams (otherwise: mail the teacher)
- ▶ use table on on Sharepoint:
<https://docs.google.com/spreadsheets/d/1mccTYDOvN4xTTVM-eGzGCyHcHY3Gofys1OYRJ5fE2rc/edit?usp=sharing>
- ▶ priority:
 1. exchange students
 2. real semester-7 students
 3. others

Elevator pitches of the courses



ALE1/2

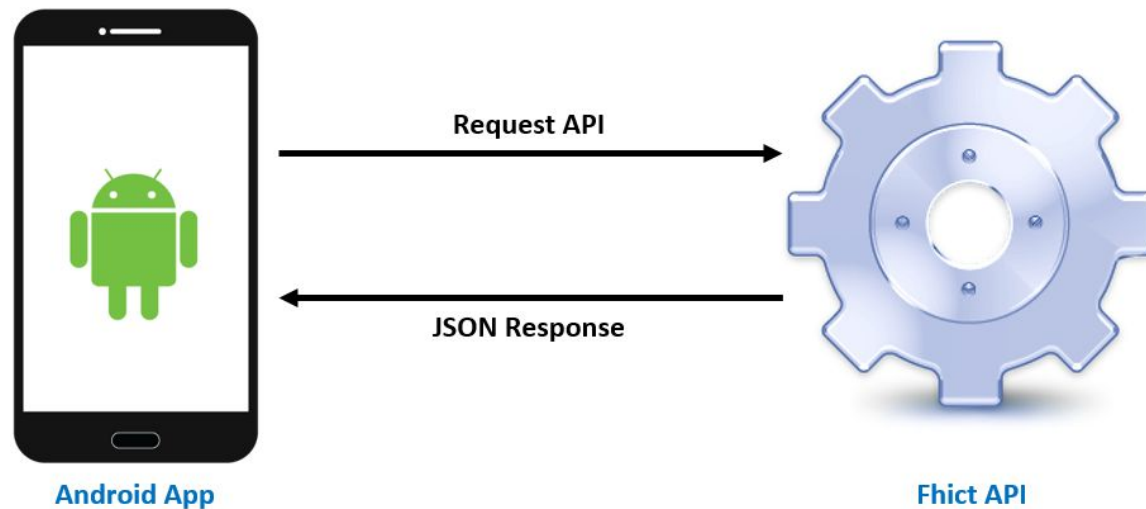
- ▶ Automata and Logic software Engineering
- ▶ C# programming, UML, algorithms
- ▶ ALE1: processing *logical propositions* (MATH1)
- ▶ ALE2: processing *automata* (MATH2)

- ▶ challenging!
- ▶ more difficult than other courses
(no easy EC's!)
- ▶ for Tue pre-master students and others

ANDR1/2

You will be able to make an Android app, to:

- ▶ retrieve JSON content from FHICT API
- ▶ create and populate views
- ▶ solve efficiency matters



Android 2 (Q2):

- ▶ project
- ▶ Google Maps, location services, FireBase backend, deployment

BEC1:

Business Economics 1- Financial Accounting

4
Statement of Cash Flows
Harbour Island Company
Year Ended December 31, 2011

Focus on the external reporting for the organization:

- How do I calculate profit?
- How can I evaluate the business results?
- How can I read a financial statement and year reports?
- How do I setup a Balance sheet and Income statement?

December 31, 2010	\$6,450	\$ 500	\$ 6,950
Net income		1,085	1,085
Less: dividends		(200)	(200)
Common stock issuance	3,100		3,100
December 31, 2011	<u>\$9,550</u>	<u>\$1,385</u>	<u>\$10,935</u>

December 31, 2010

December 31, 2011

BEC2:

Business Economics 2- Managerial Accounting (Q2)

Focus on the internal cost strategies in the organization:

- How do I calculate cost prices?
- What types of cost drivers are there?
- How can I read a financial statement and year reports?
- How do I setup a Balance sheet and Income statement?

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Chapter
14-5

review

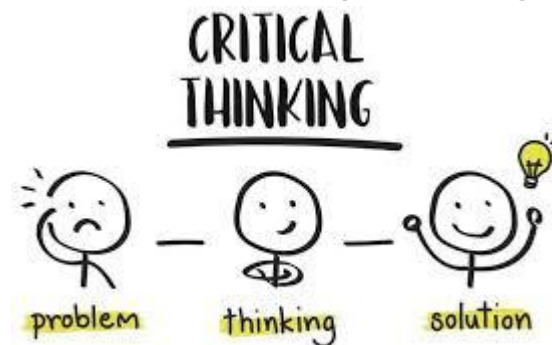
- Product Costing
for Service
Industries

costing

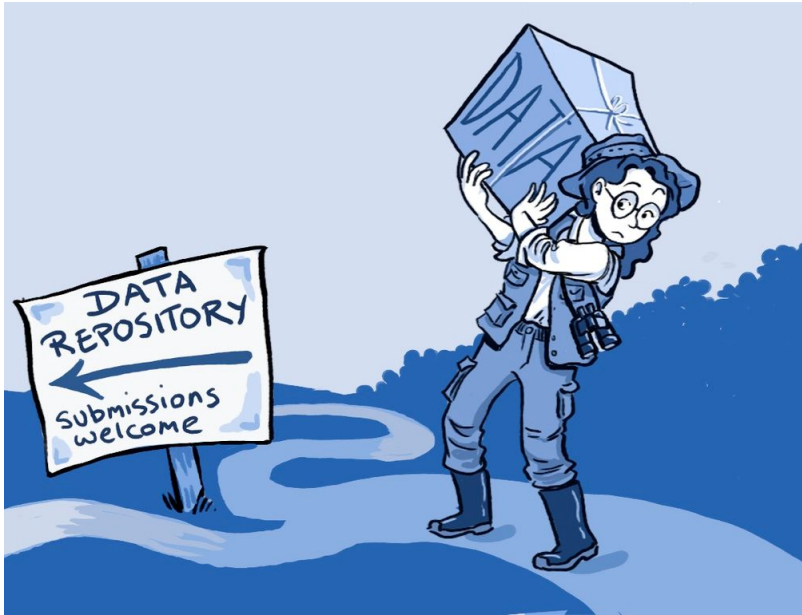
- Theory of
constraints
- Balanced
scorecard

CT: Critical Thinking

- ▶ Understand the impact of BIAS
- ▶ Critical assess problems and perform root cause analysis
- ▶ Model root-cause analysis
- ▶ Applying Fishbone diagrams
- ▶ Explaining an Issue or Problem. Upon completion of a faculty-designed intervention, students will demonstrate an increased ability to explain an issue or problem comprehensively.
- ▶ Employing Evidence/Information Effectively Upon completion of a faculty-designed intervention, students will demonstrate an enhanced ability to employ evidence/information in conducting a comprehensive analysis of an issue or problem.
- ▶ Analyzing Contexts. Upon completion of a faculty-designed intervention, students will demonstrate an enhanced ability to analyze contexts when presenting a position on an issue or problem.
- ▶ But above all it's FUN!



DWH: Data Warehousing and Big Data



DWH =

- system used for reporting and data analysis
- core component of business intelligence

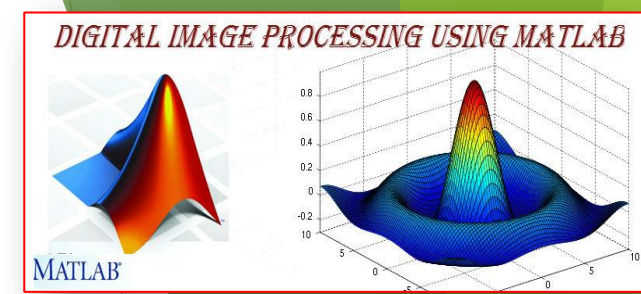
Contents of the course:

- trends in data warehousing
- applying theory to practical cases
- guest lecture Big Data analyses with live samples
- understanding business impact on organizations
- different architectural approaches

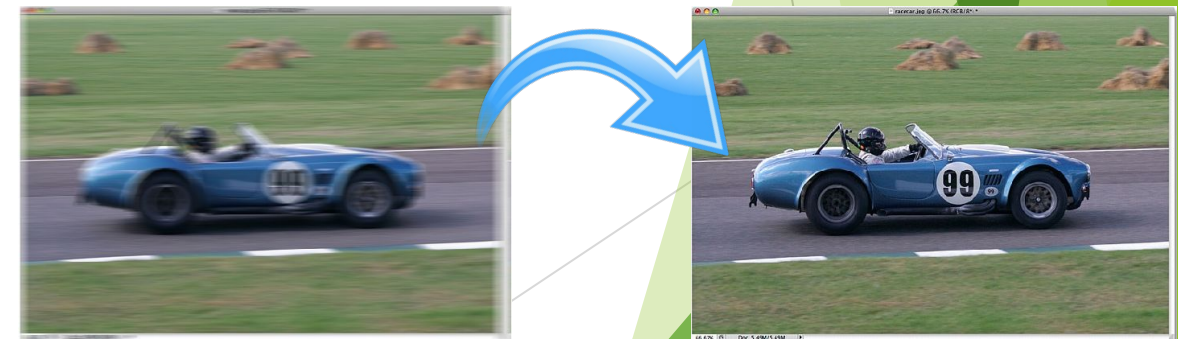
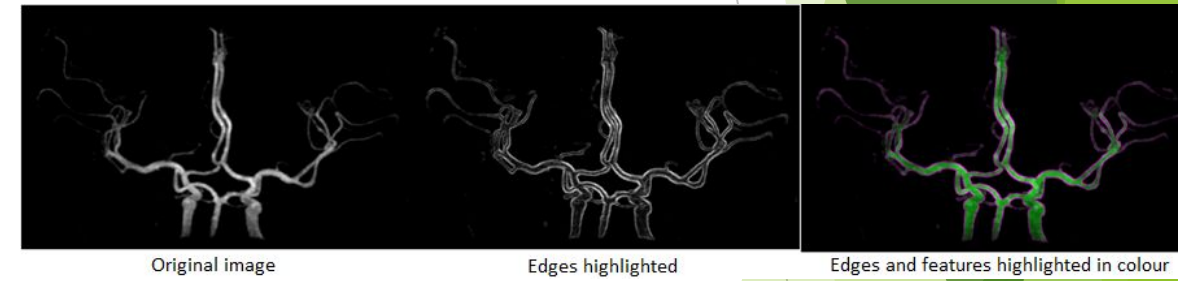
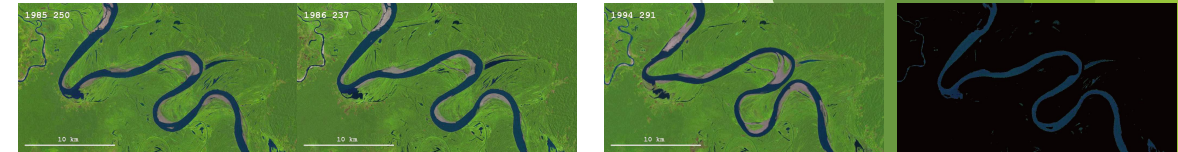
IT-AU: IT Auditing

- ▶ Understand the impact of an IT- Audit
- ▶ Understand and apply the business ethics
- ▶ Capable of writing an advice report on high level topics
- ▶ Understand the components of an IT-Audit and understand the relation to business processes and financial processes
- ▶ Perform an IT-Audit on a financial or outsourcing process
- ▶ Understand the principles of Compliancy and due diligence
- ▶ Understand and apply internal controls

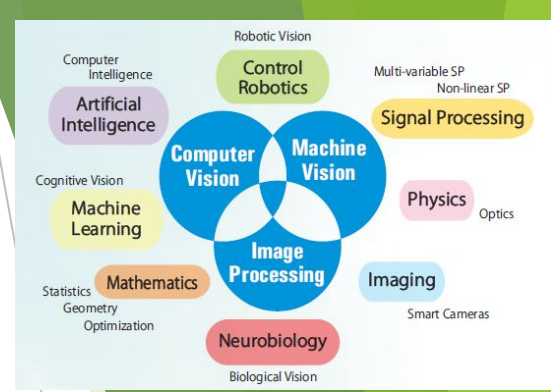
IPV1 (Q1): Image Processing & Vision 1



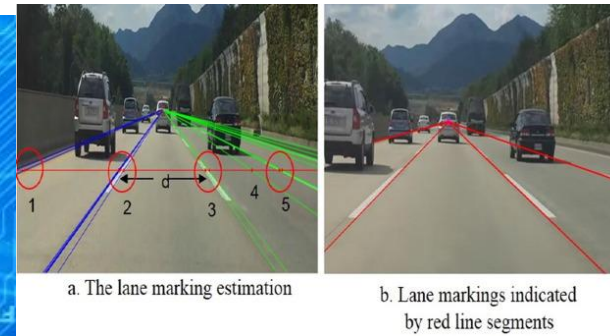
- ▶ Introduction to Digital Image Processing and Matlab
- ▶ Image Processing toolbox, DIPImage toolbox
- ▶ Image enhancement techniques
 - ▶ Make the image smoother or sharper, bring out obscured objects or detect edges in images
 - ▶ Point processing, linear filters and nonlinear filters
- ▶ Image restoration techniques
 - ▶ Restore images blurred by motion, camera misfocus
 - ▶ Remove atmospheric haze



IPV2 (Q2): Image Processing & Vision 2

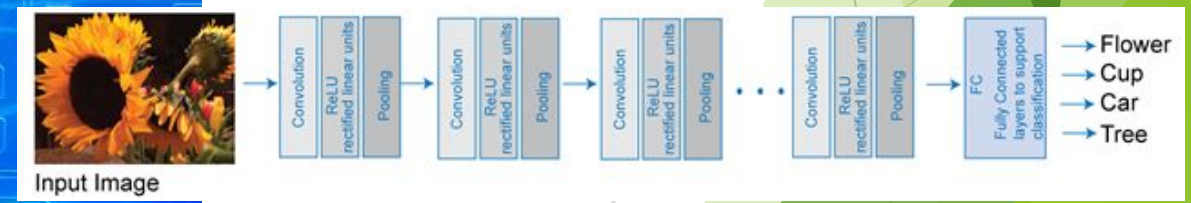


- ▶ Image segmentation techniques
 - ▶ Morphological operators, region-growing, ...
 - ▶ Detect and describe contours, specific structures, ...
- ▶ Machine learning
 - ▶ Supervised, unsupervised algorithms
 - ▶ Classification, regression problems
 - ▶ Model-building for supervised image classifier
- ▶ Deep learning
 - ▶ Neural networks for image classification
- ▶ Computer vision
 - ▶ Face recognition, object detection



PB08 AQ 0999

“PB08 AQ 0999”





IT Operations (ITOPS):

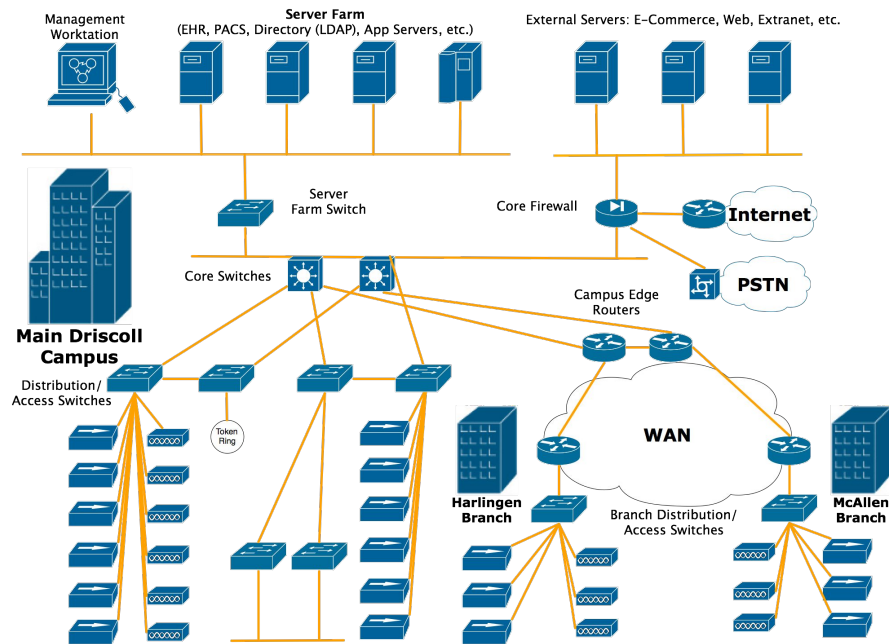
IT
an

- concerned with setting up, improving and managing IT services
- focuses on customer needs and IT services for customers

- Gain an overview of the field of IT service management
- Get to know the ITIL methodology and prepare for the official ITIL Foundation exam
- Explore some alternative methodologies
- Do research, write an advisory report and present it

Math3 (Q2)

- ▶ mathematical models for business optimization
 - ▶ networks, graphs, algorithms



MOT: Management of Technology (Q2)

- ▶ Business & Digital transformations; your role in them as well as IT's
- ▶ Nolan's Growth model, and applying this to organizations
- ▶ Business modelling tools
- ▶ ICT Business Integration & related competences
- ▶ Change Management; the complexity of organizational change and the impact on employees



PRC1 + PRC2

- ▶ PRC1 (Q1) Programming Language C:
 - ▶ Pointers
 - ▶ Memory Handling
 - ▶ Bit-operations
- ▶ PRC2 (Q2) Programming Language C++:
 - ▶ Hybrid Language
 - ▶ Memory Handling
 - ▶ Object Oriented

Assessment done by assignments

QP: Quality Principles - introduction in Quality & Business models



- apply models directly on your practical case
- learn to think outside the box (outside normal reference boundaries)
- impact of stakeholders in projects and IT projects
- Lean Six Sigma and Kaizen (in particular: service models)
- business ethics and corporate social responsibility

- it is fun and it helps you towards your final graduation

SD3 - System Development 3

- ▶ **OO Analysis and Design**
- ▶ Structural modeling
 - ▶ Discover classes
 - ▶ Discover relationships between classes
- ▶ Dynamic modeling
 - ▶ Sequence diagrams
 - ▶ Activity diagrams
 - ▶ Other diagrams
- ▶ Components and reuse
- ▶ Work in small groups
- ▶ Group assignments and written exam

SePr - Why software security?



- Bitcoin: \$64M in cryptocurrency stolen in 'sophisticated' hack, exchange says
- Cyberwars with cyber weapons... as hacking techniques

Subjects:

- SDL (Secure Development Lifecycle)
- Secure (and security) programming
- Software security testing
- Hacking Threats and Techniques

Course Set-up:

- A lot of freedom in your learning, no written exam.
- With freedom comes responsibility: “Get informed, research, discuss, apply and account for”.
- Peer learning hacking teams (2 students) and security web project development teams (5-6 students).

warning:
not allowed if you
have completed the
Cybersecurity specialization

SOT + SAI:

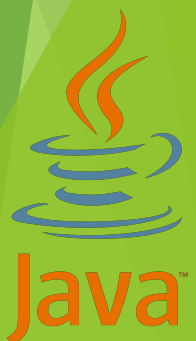
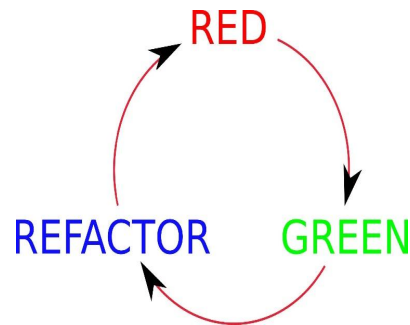
- ▶ Q1 - SOT (Service Oriented Techniques)
 - ▶ REST web services
 - ▶ Java Messaging Service
- ▶ Q2 - SAI (Software Applications Integration)
 - ▶ Patterns on how to integrate different applications with each other
- ▶ A lot of Java programming

TCI: Testing & Continuous Integration



- ▶ Testing code in isolation
- ▶ Mocking dependent code
- ▶ Test Driven Development
- ▶ Personal + 1 group assignment
- ▶ A lot of testing!

JUnit



WEB2 + WEB3

- ▶ WEB2 (Q1):
 - ▶ front-end web development
 - ▶ AngularJS, Node.js, npm, Bower
- ▶ WEB3 (Q2):
 - ▶ back-end web development
 - ▶ Laravel, Artisan, Blade

UID/UX: Design for Use



This course will help you to design software...
that people want to use....

- Work in groups
- Week 1-4: weekly assignments
- Week 5,6: end project
- Week 7: assessment

No programming skills required.



Sep 2021 - Jan 2022 graduation project

Entry requirements to start your graduation:

- ▶ First 3 years **completely** finished (including minor and internship)
- ▶ At most 6 ECTS open from semester 7
- ▶ Detailed presentation will be given in a few weeks

questions

- ▶ use the Chat

