Institut d'informatique
Computer Science

March 2023

Rules

Information

Research

Administration

MASTER IN COMPUTER SCIENCE
TAKE-THE-LEAD.CH


Feel free to chat until the presentation starts!
MASTER IN COMPUTER SCIENCE
TAKE-THE-LEAD.CH

Program: mcs.unibnf.ch

- Joint Master by Bern, Neuchatel, Fribourg
  - Quick transport, with reimbursement.
  - Large choice of courses.
  - Many research groups and topics.
  - English is the main language
  - Common systems and rules
- Affordable accommodation
- Cultural diversity
- Cultural attractions and sport

Program Principles

Courses (60 ECTS)

T_0	T_1	T_2	T_3	T_4	T_5	T_6
General	Distributed Systems	Advanced Software Engineering	Advanced Information Processing	Logic	Information Systems and Decision Support	Data Science

Master Thesis (30 ECTS)

An individual research project with a thesis report

Additional Minor (30 ECTS)

An optional module may be chosen from approved minor programs in other disciplines at Swiss Universities

Master (90 ECTS)

Master (120 ECTS)

Program: Principles

- A student chooses 12 courses/seminars.
  - A minimum of 8 courses (50 available)
  - A minimum of 2 seminars (from 15 groups)
- All courses/seminars are credited with 5 ECTS.
  - 140 hours of work in 14 weeks
  - 4h class, 4h homework, 2h reading/week
- Seminars: less regimented (e.g. task-oriented, by appointment, but *still* 5 ECTS load)
- There are no mandatory courses.

Program Tracks

T1 - Distributed Systems

Distributed systems, peer-to-peer networks, grid and cloud computing, mobile communications, concurrency, foundations and algorithms, security

T2 - Advanced Software Engineering

Advanced methods for the analysis, development and testing of modern and reliable

T3 - Advanced Information Processing

Pattern recognition, document analysis, (re)acquisition of information and computer graphics, computational linguistics, search technologies

T4 – Theory and Logic

Theoretical computer science, logic, cryptography, stat/ML theory

T5 - Information Systems and Decision Support

eBusiness, eGovernment, information management, databases management systems, operations research

T6 – Data Science

Big data, machine learning, artificial intelligence, noSQL, data science, data visualization

Track 1 - Distributed Systems

Bern

- Advanced Networking
- Cryptographic Protocols
- Cryptography
- Internet of Things
- Computer Networks
- Communication and Distributed Systems
- Operating Systems
- System verificaiton
- Security
- Cryptography

Neuchatel

- Cloud Computing
- Security
- Operating Systems

Fribourg

- Advanced Software Engineering
- Dependable Systems
- System Verification

Track 2 - Advanced Software Engineering

Bern

- Compilers
- Software Engineering
- Product Lines

Neuchatel

- Concurrency
- Operating Systems

Fribourg

- Software Engineering
- Digitalisation
- Operating Systems

Track 3 - Advanced Information Processing

Bern

- 3D Processing
- Optimization
- Computer Vision
- Deep Learning
- Pattern Recognition
- Computer Graphics
- ML and AI

Neuchatel

- Digital Humanities
- ML and Data Mining
- Statistical Learning

Fribourg

- Multimodal UI
- Pattern recognition
- Affective computing
- Chatbots
- Explainable AI
- Human Computer Interaction

Track 4 - Theory and Logic

Bern

- Cryptographic Protocols
- Cryptography
- Justification Logic
- Logic and Theoretical Computer Science

Neuchatel

- Machine Learning and Data Mining
- Reinforcement Learning
- Privacy and Fairness in Machine Learning

Fribourg

- Automata
- Semi-structured data
- Dependable Systems
- System verification

Track 5 - Information Systems and Decision Support

Neuchatel

- Design of Governance in socio-technical information systems

Fribourg

- Advanced Mathematical Modelling and Optimisation
- Advanced Decision Support
- Optimization
- Digitalisation
- Fuzzy systems
- Graph theory
- Metamodelling
- Smart Cities
- Life Engineering
- Social Computing

Track 6 - Data Science

Bern

- Optimization
- Computer Vision
- Deep Learning
- Pattern Recognition

Neuchatel

- Cloud computing
- Concurrecnt: Multi-core programming and Data Processing
- Fairness and Privacy in ML
- ML and Data Mining
- Reinforcement Learning and Decision Making Under Uncertainty
- Statistical Learning

Fribourg

- Big Data Infrastructures
- Data Management
- Document Image Analysis
- Fuzzy Systems
- Recommender Systems
- Pattern Recognition

Course load

- Diversification
  - At least 3 tracks have to be used.
- Optional focus
  - At least 25 ECTS in one track
    + Master thesis (30 credits).
- Duration
  - Normal: 3 semesters
    - e.g. 4 courses for 3 semesters + thesis
  - Maximum: 6 semesters

Student's ToDo List

- Reimbursement of travel expenses

  By the student's home university

  - keep all receipts
  - CFF half-fare, 2nd class.
  - The lecturer must sign every attendance
- Master thesis
  - First, find a supervisor.
  - Then, register your topic and send the form.

More information?

- All the needed information (and more) available in the web site:
  - http://mcs.unibnf.ch/
  - http://mcs.unibnf.ch/admin
  - Regulations
  - Maps
  - Train schedule
  - FAQ
  - Student Association (Michael.Luggen@unifr.ch)

Our Web Site


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MASTER IN COMPUTER SCIENCE
HOME PROGRAM ADMISSION ORGANIZATION LECTURERS RESEARCH GROUPS
STUDENT LIFE DOWNLOADS
Swiss Joint Master of Science in Computer Science
Program
Courses, timetables, and more information concerning the program itself.
Admission
Are you interested in joining the program? Find out more about the admission process.
Research Groups
Find out more about our research groups and their respective areas of specialization.

Our Web Site: Courses

MASTER IN COMPUTER SCIENCE

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Schedules and Rooms

Period	Weekly
Schedule	Monday, 08:45 - 12:00
Location	UniNE, Unimail
Room	B013

Additional information

Comment	**First Lecture** The first lecture will take place on Monday, 23.09.2019 at 08:45 in UniNE, Unimail, room B013.

Our Web Site: Administartive

MASTER IN COMPUTER SCIENCE

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- Regulations (Règlement / Reglement)
- Study plan (Plan d'études / Studienplan)
- Supplement to the study plan (Annexe du plan d'études / Anhang zum Studienplan)

Rules documents

- Teaching unit rules
- Exam rules
- Anticipation of credits at the master level
- Summary of Important Information

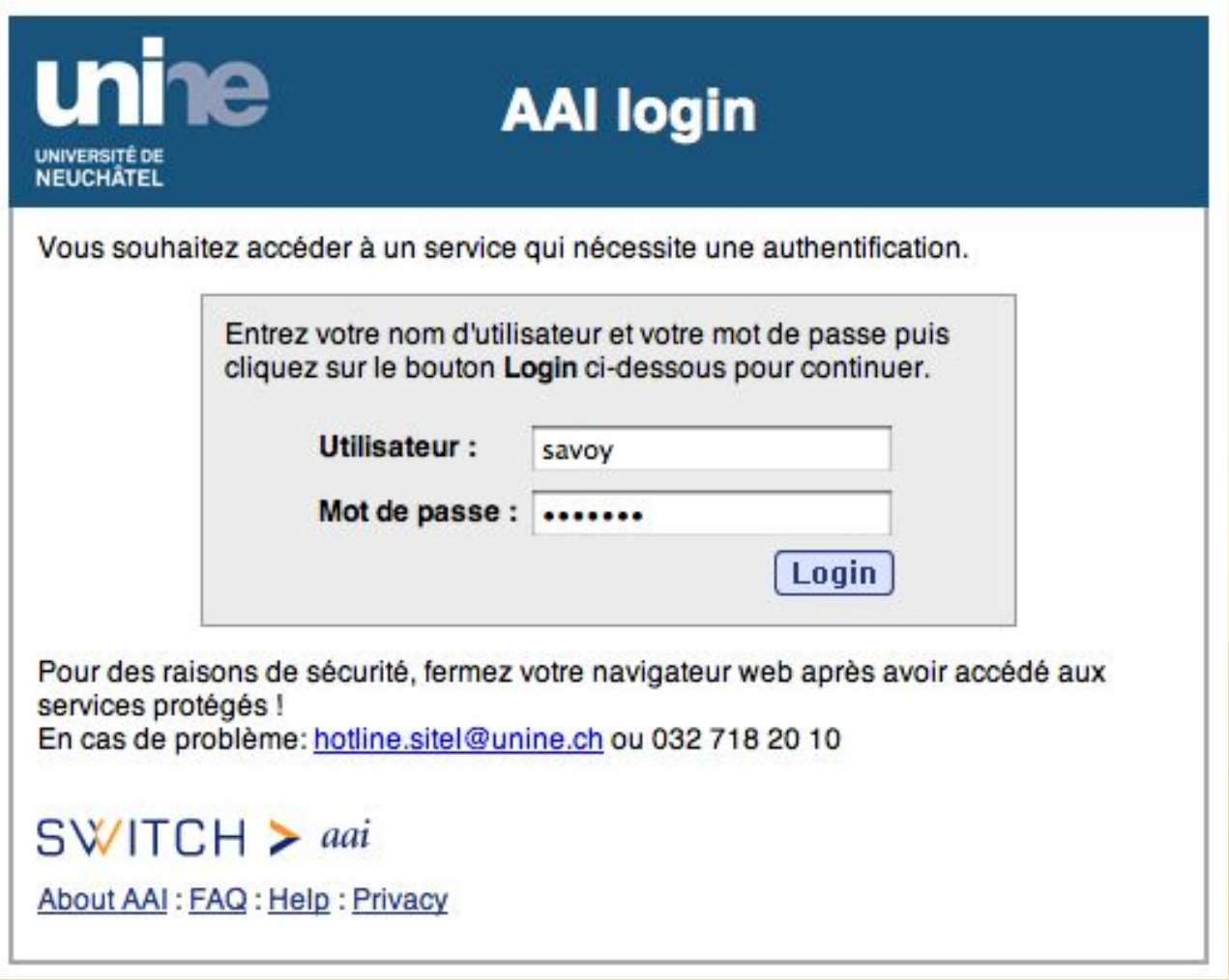
Forms

- Travel regulation (BeNeFri forms)
- BeNeFri form for hosted JMCS students
- Master thesis form

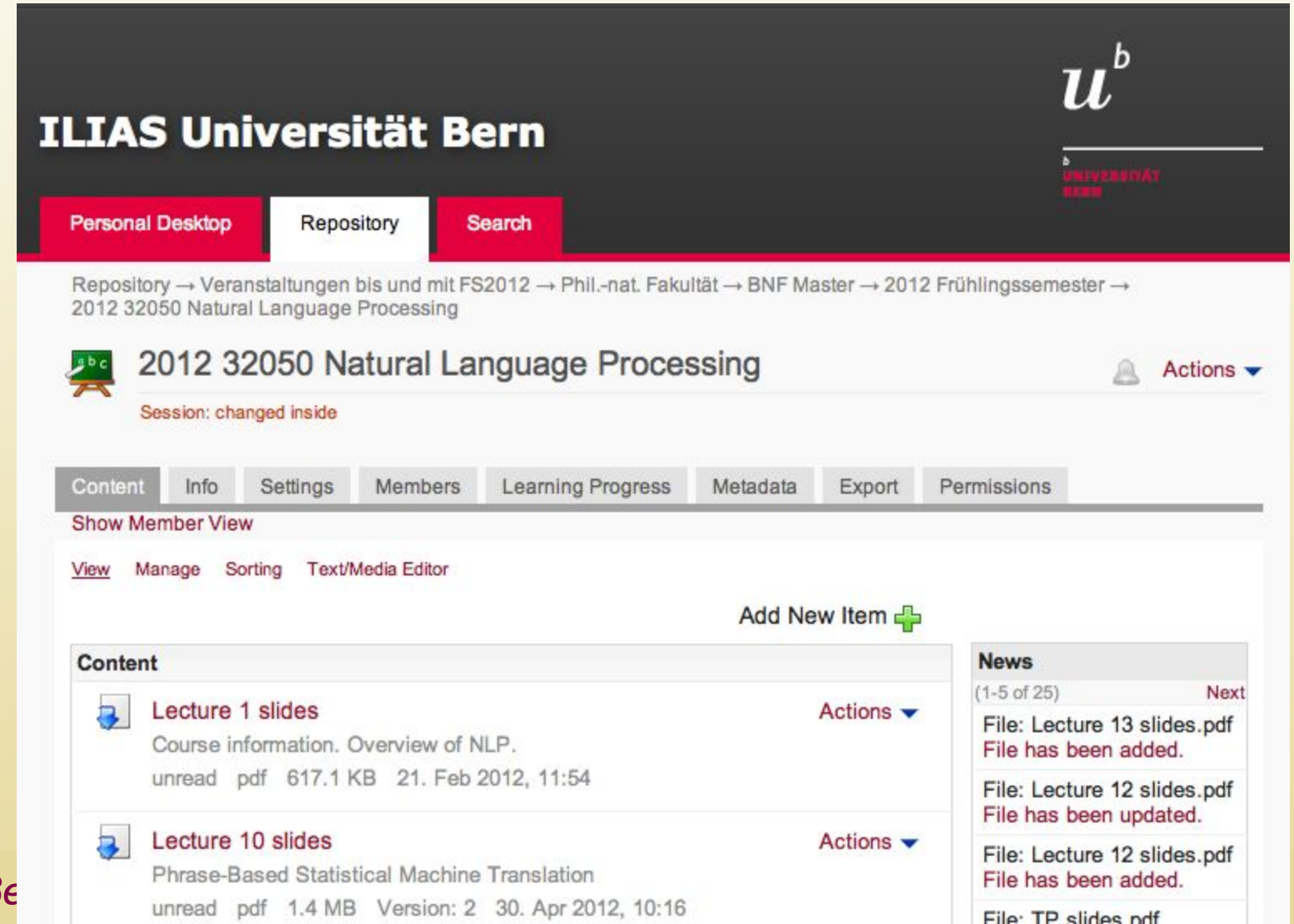
Research in Neuchatel

- **Pascal Felber**
  - P2P networks and *grid*
  - Mobile and *ad hoc* networks
  - Large-scale systems
  - Concurrent systems
  - Cloud
- **Valerio Schiavoni**
  - Dependable systems
  - Network security
  - System security
- **Jacques Savoy**
  - Search engines
  - Text categorization
  - Author profiling
  - Fake news detection
- **Christos Dimitrakakis**
  - Reinforcement Learning
  - Optimal Decisions
  - Human-AI Collaboration
  - Algorithmic Fairness
  - Data, Learning and Privacy

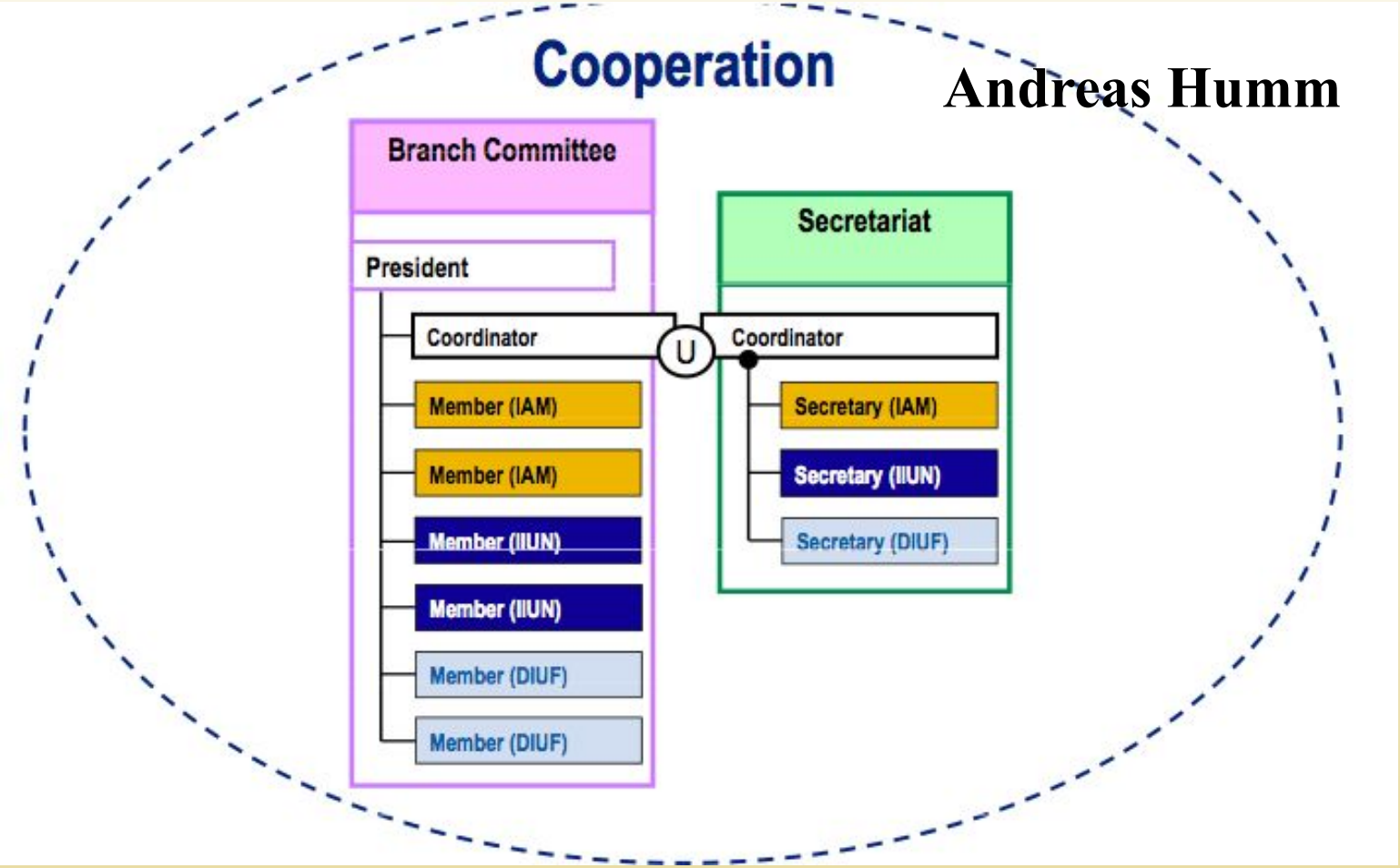
Learning Management System: ILIAS



Learning Management System: ILIAS



Administrative Organization



Prerequisite Courses?

Passerelle HES (30 credits)

- Mathématiques discrètes (6 ECTS, Fall)
- Artificial Intelligence (6 ECTS, Spring)
- Operating Systems (6 ECTS, Spring)
- Language et compilation (6 ECTS, Spring)
- At UniFR or UniBE

Other prerequisite courses?

- Software labs (5 ECTS)
- At UniFR or UniBE

At UniNE

- Rooms for you:
  - Library (2nd floor) (with mathematicians).
  - Master room B107 (for you).
  - and with other students.
- Centre de langues: English, German, and French courses.
- SITEL: helpdesk (Poseidon / Neptun).
- SUN: Sports at UniNE (fitness).
- Cafeteria (lunch, + micro-wave).

Questions?

- Prerequisite courses. Which ones?
- How many courses per semester?
- Which ones are the most appropriate for me?
- When should I start my Master thesis?
- Can I obtain one additional semester?

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Your future career

- Computer scientist in a local/multinational company
- Startup director, researcher or engineer
- HES professor
- Doctoral student -> researcher -> professor
- ?

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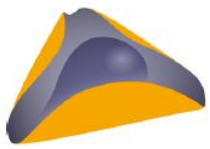

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