

Computer Science Basics Presentation

Fall Term 2025/2026

Emmanuel Benoist | BFH-TI

Presentation

Emmanuel Benoist

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PhD at the University of Caen (France)

Professor at the Berner Fachhochschule

- Computer Science Department in Biel since 1999
- Actual courses: Assembler, C, Operating Systems, Web Programming and Web Security

Research

- Member of the Institute for Cybersecurity and Engineering (ICE)
 - Web Security
 - Privacy Protection on the Web
 - e-Health

Course : “Grundlagen der Informatik”

Goals of the course

- The students know the basic of what computer science is.
- They can manipulate numbers written in hexadecimal base.
- The students have an overview of the way data can be coded in a computer. Coding of numbers (negative or float), of text and binary data.
- They have seen and installed a Unix Virtual machine and know how to use it.
- They know the basics of compression.
- They know the basics of cryptography.

Module BTX8o6o

- Grundlagen der Informatik

Contact

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Control of Knowledge

Pb Module

- One final Exam (90 minutes)
- One test (60 minutes)
- Small questionnaires at the beginning of each course
 - only the 8 best count
 - 2 points per questionnaire where you have more than 4 from 5 OK
 - 1 point if you have at least 2 good answers.
 - Maximum is 15 points

Grading (100 Points)

- Questionnaires = 15 pts
- Test = 20 pts
- Exam = 65 pts

Marks

- 6.0 : Points ≥ 90
- 5.5 : Points ≥ 80
- 5.0 : Points ≥ 70
- 4.5 : Points ≥ 60
- 4.0 : Points ≥ 50
- 3.5 : Points ≥ 40
- 3.0 : Points ≥ 30
- 2.5 : Points ≥ 20
- 2.0 : Points ≥ 10
- 1.5 : Points ≥ 5
- 1.0 : Points < 5

Schedule of the course

- **History of computer science**
 - ▣ from Babage to real computers
- **Architecture**
 - ▣ What is in a computer?
 - ▣ What is the role of an operating systems?
- **Encoding**
 - ▣ Int / hexadecimal
 - ▣ 2-complement notation for negative numbers
 - ▣ IEEE754 Float notation
- **Unix world**
 - ▣ Installing Linux, some commands
- **Encoding of text files (accents, special chars)**
 - ▣ Iso-Latin1 and other 8-bit encoding
 - ▣ UTF-8
- **Compression of files**
 - ▣ Lossless compression (ZIP)
 - ▣ Lossy compression (images and Video)
- **Bases of Cryptography**
 - ▣ Symetric cryptography; Asymmetric cryptography, PKI.

Information about this course

Moodle of the course:

<https://moodle.bfh.ch/course/view.php?id=41472>

- Slides
- Examples
- Exercises
- Resources (bibliography and Internet)

Who are you?

Which apprenticeship did you do?

Are you working? What sort of job do you do?

Questions?

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