

CAS

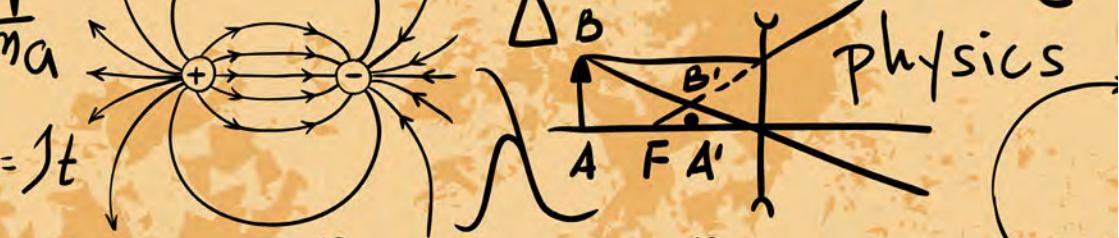
AI for Teachers



Continuing Education in Extended Intelligence

2026/2027





$$E = mc^2$$

16

$$R_1 > 0$$

6

5

15

6

5

16

5

science

$$\overline{m}_p = -\overline{r} -$$

Eureka!

$$E = h\nu$$

$$E \quad a = \frac{dv}{dt} = \frac{\Delta v}{\Delta t}$$

$$2E_0 \quad \lambda$$

$$-2E_0 \quad \lambda$$

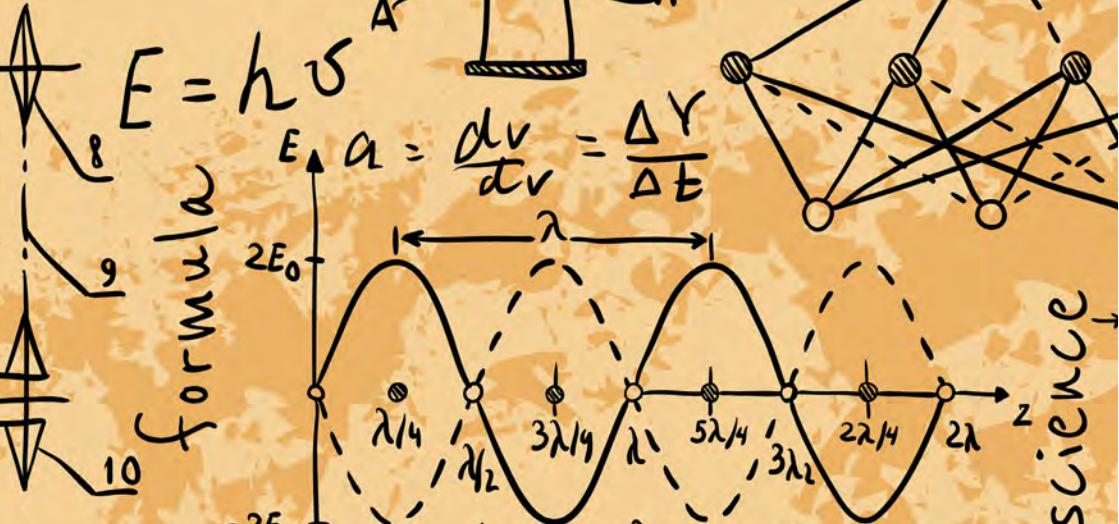
$$\lambda/4 \quad 3\lambda/4$$

$$\lambda/2 \quad \lambda$$

$$5\lambda/4 \quad 3\lambda/2$$

$$2\lambda/4 \quad 2\lambda/2$$

$$2\lambda \quad 2\lambda$$



$$T = \frac{1}{2}mv^2 \quad E = m_0 c^2 + \frac{m}{c}$$

Table of Contents

- 2 Introduction**
- 4 Target groups**
- 5 Objectives**
- 6 Key figures**
- 7 Modules**
- 8 Final project**
- 9 Cost and Registration**
- 10 Schedule 2026/2027**
- 11 Contact**
- 12 Continuing Education in Extended Intelligence**

CAS

AI for Teachers

Introduction

In recent years, schools and teachers have been confronted with AI tools that are fundamentally challenging established pedagogical and didactic settings. Large Language Models (LLMs) have reached a level that enables learners and teachers to generate, correct and summarize texts, and even create planning documents that are close to or sometimes even above the average standard. The clever use of common AI tools increases the efficiency, so that both teachers and students now feel compelled to use these tools for certain tasks. The only question is: does this accelerated work modality serve the main purpose of school - education - or does the use of AI in schools hinder educational processes?

The CAS AI4T course has two objectives. The first is to gain an in-depth insight into the technology of LLMs. In this part, participants create simple language models “from scratch” with the aim of understanding the mechanisms of the systems. The second part of the course focuses on the use of existing “state of the art” LLMs in a school context with the aim of facilitating educational processes.

"Our intelligence is what makes us human, and AI is an extension of this quality."

YANN LECUN
French-American machine learning specialist
Chief AI Scientist at Facebook





Target groups

The CAS AI4T is aimed at teachers at baccalaureate schools and lower secondary level, lecturers in teacher training and those responsible for education, as well as anyone interested in the topic of digitalization in education.

SUITABLE AND INTENDED FOR TEACHERS AT SECONDARY LEVEL II (Baccalaureate level):

The course is primarily aimed at teachers at upper secondary level (Baccalaureate level) and in particular those teaching STEM subjects. In terms of content, it is dedicated to the technical basics of AI on the one hand and the use of AI in teaching on the other. Through practical exercises, participants learn how to apply current machine learning models using the Python programming language.

If you have any questions about whether this program is right for you, please do not hesitate to contact us.

Objectives

The CAS AI4T is divided into six modules and runs over 20 course days from August to January. The last block concludes with an individual project. On completion of the course, graduates will

be familiar with the history and present of technological aids in pedagogy and didactics, and be able to critically assess their influence on learners, teachers and society,

have a basic understanding of common self-adaptive algorithms,

be able to carry out basic language processing and use generative algorithms,

be able to use AI to plan, diagnose and evaluate learning processes in a responsible and targeted manner,

be able to critically develop, implement and communicate about an AI project for learning processes,

know the legal foundations and the ethical and socio-political aspects of the use of AI in learning processes.

CAS AI for Teachers

Summary

CAS AI for Teachers

Degree

Certificate of Advanced Studies in AI for Teachers University of Bern (CAS AI4T Unibe)

Scope

16 ECTS

Duration

2026-08 - 2027-07
(2 years is possible)

Start

2026-08

Admission

Degree from a university, university of teacher education or university of applied sciences

Cycle

Annual

Language

Englisch and Swiss national languages

Further information

www.unibe.ch/continuing_education_programs/cas_in_artificial_intelligence_for_teachers

Locations

The courses take place at the University of Bern and at the Bern University of Teacher Education (PHBern). The exception is Module 6, which takes place in the Mürren ski resort, two hours by train from the city of Bern. All courses are also held online. Remote participation is possible.

Teaching Methods

Our teaching methods are modern and collegial. The modules use online platforms with multimedia materials and exchange forums to support learning and communication in the learning groups. The main programming language is Python.

Workload

A module comprises approximately 20 teaching hours plus a module assignment (expected workload per assignment: 30 hours), with 2 ECTS credits awarded for each module completed. The final CAS project comprises 4 ECTS points.



Modules

Module 1

History and present of technology in Teaching

The module provides an overview of the history of technological aids in school and highlights their influence on learning processes.



Module 2

Technical Foundations 1 - Maschine Learning

This module deals with machine learning algorithms, their training, fine-tuning and evaluation.



Module 3

Technical Foundations 2 - NLP and Generative Models

This module deals with natural language processing and the construction and evaluation of generative models.



Module 4

AI in Education 1 - Planning, Diagnostics and Assessment

This module critically examines the use of AI algorithms for planning, diagnosis and assessment in education.

Module 5

AI in Education 2 - Ethical, legal and socio-political Aspects

This module deals with ethical aspects, the legal framework and the social and professional implications of the use of AI in education.

Module 6

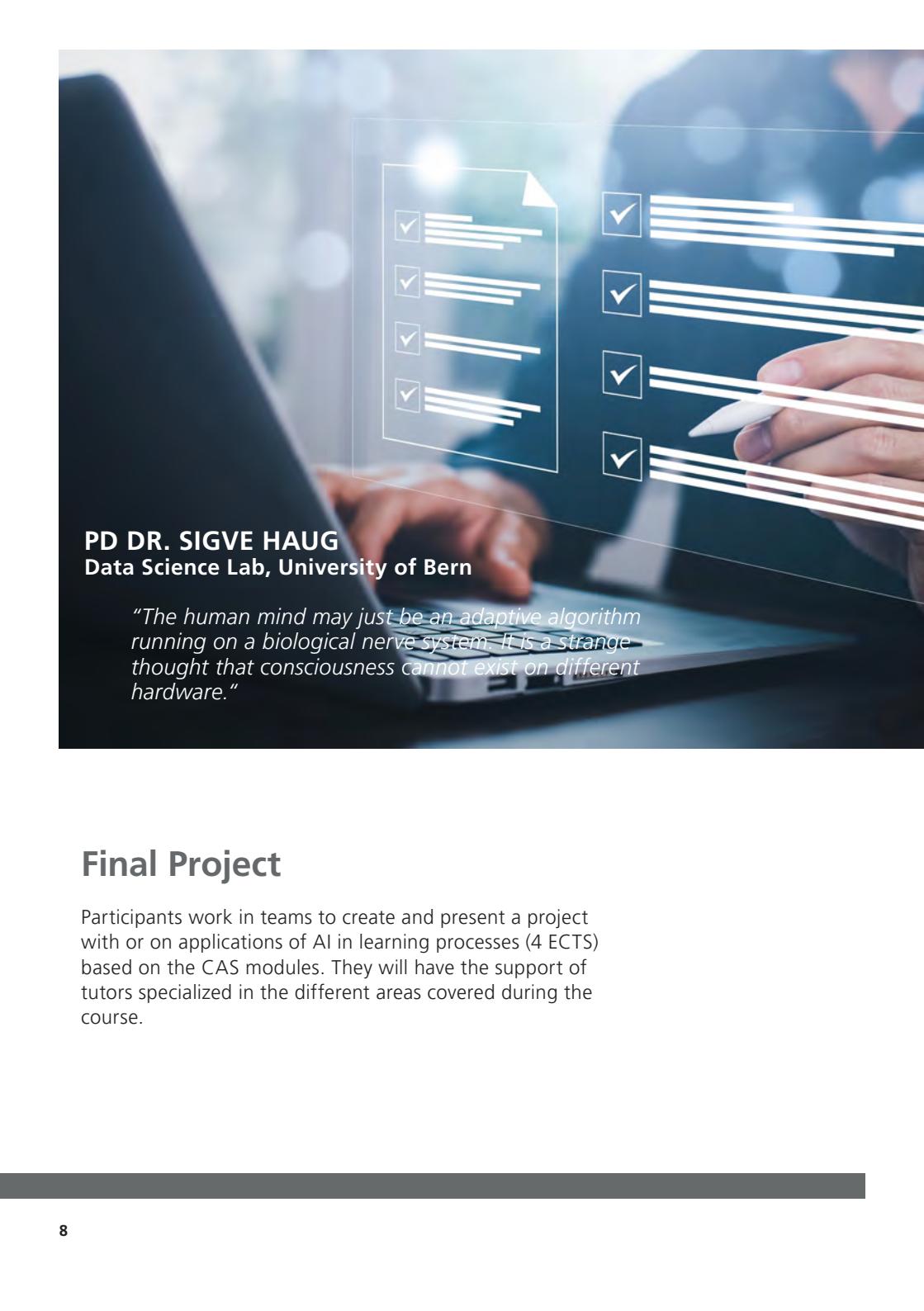
AI in Education 3 - Selected Topics

The module deals with important past and current topics related to AI in educational processes.

Final Project

CAS Thesis

The final CAS Project is seen as the application and consolidation of all gained knowledge. Teamwork and the use of own data are encouraged.

A blurred background image of a person's hands interacting with a tablet. On the screen, there is a digital checklist with four items, each with a checked box. The person's hand is visible, holding a stylus and pointing towards the screen.

PD DR. SIGVE HAUG
Data Science Lab, University of Bern

"The human mind may just be an adaptive algorithm running on a biological nerve system. It is a strange thought that consciousness cannot exist on different hardware."

Final Project

Participants work in teams to create and present a project with or on applications of AI in learning processes (4 ECTS) based on the CAS modules. They will have the support of tutors specialized in the different areas covered during the course.



Cost

Regular CAS program: CHF 9900

Employees and students of the University of Bern and of the University of Teacher Education Bern (PHBern): CHF 6900

Inclusive of all modules, performance assessments, certificates, materials and teaching platforms, coffee breaks, full board hotel in Mürren (Module 6) and diploma apero.

Participants must bring their own laptops.

Registration

Register via www.unibe.ch/continuing_education_programs/cas_in_artificial_intelligence_for_teachers

Registration opens in November and a maximum of 20 applications can be accepted each year. Applications are processed in the order of arrival. The CAS can only be offered if sufficient registrations are received by May 31st.

Registered participants will receive a confirmation of acceptance by email and will be invited to one of the next Introduction events. Attendance to one Introduction is mandatory. Participants can cancel their registrations free of charge up to the registration deadline. After the deadline, the regulations apply.

To check if registration is currently possible, visit



Schedule 2026/2027

Module 1 History and Present of Technology in Teaching

2026-08-21, 2026-08-22, and 2026-08-28

Module 2 Technical Foundations 1 - Machine Learning

Weekly from 2026-09-05 until 2026-09-22

Module 3 Technical Foundations 2 - NLP and Generative Models

2026-10-05 - 2026-10-09

Module 4 AI in Education 1 - Planning, Diagnostics and Assessment

Weekly from 2026-10-23 until 2026-11-13

Module 5 AI in Education 2 - Ethical, legal and sociopolitical Aspects

Weekly from 2026-11-20 until 2026-12-11

Module 6 AI in Education 3 - Selected Topics

2027-03-01 - 2027-03-05

Further introductory courses:

Algorithms and programming are important tools in data-driven research. Python is a good scripting language widely used to create pipelines of tasks typical for large computations and analysis on large data sets.

For people who wish to refresh their programming skills in Python or who are new to this programming language, we recommend our Introduction to Python course.



CONTACT



PD Dr. Sigve Haug

Director of Studies
sigve.haug@unibe.ch

Lecturers

Our lecturers are recognised experts from the University of Bern, PHBern and external organisations.

Program management

The study program is offered in collaboration with the University of Bern and PHBern. The program is managed by Prof. Dr. Dr. Marc Eyer, PD Dr. Sigve Haug (Director of Studies), Prof. Dr. Christiane Tretter, Prof. Dr. Jan Draisma, and Prof. Dr. Thomas Wihler.



Prof. Dr. Dr. Marc Eyer

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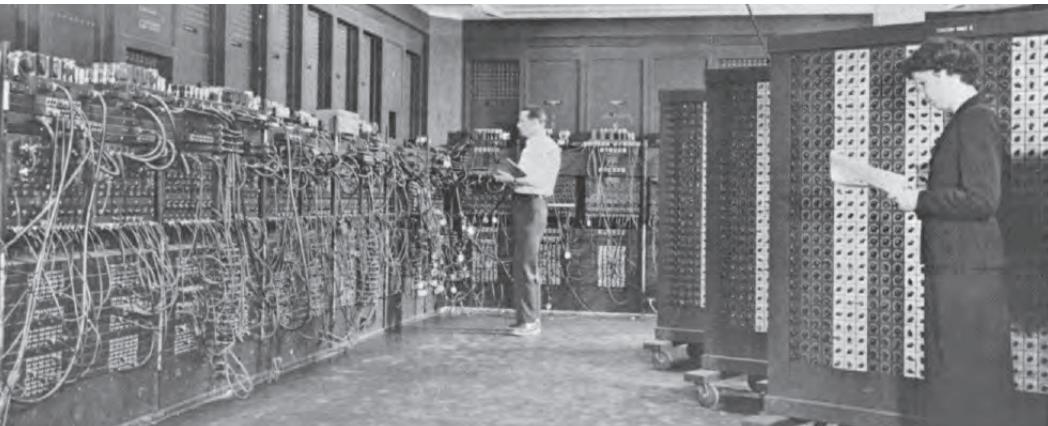


Dr. Katja Vaghi

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CAS AI4T und AICP
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Further study options: Extended Intelligence



DAS Extended Intelligence

The CAS in AI of the university of Bern can be combined into a Diploma of Advanced Studies in Extended Intelligence - the DAS XI.

The scope of the DAS XI comprises 38 ECTS:

- 16 ECTS from CAS ADS/AML/NLP**
- 16 ECTS from CAS ADS/AML/NLP**
- 2 ECTS from DAS Module**
- 4 ECTS from DAS Thesis**

MAS Extended Intelligence

The CAS in AI of the University of Bern can be combined into a Master of Advanced Studies in Extended Intelligence - the MAS XI.

The scope of the MAS XI comprises 62 ECTS:

- 16 ECTS from CAS ADS**
- 16 ECTS from CAS AML**
- 16 ECTS from CAS NLP**
- 2 ECTS from MAS Module**
- 12 ECTS from MAS Thesis**

Contact us, for other options.

$$\frac{C \Delta \alpha}{2\sqrt{\pi D t^2}} e^{-\frac{x^2}{4Dt}}$$

$$C = 0 \text{ for } x < 0 \text{ at } t = 0$$

$$C = C' \text{ for } x > 0 \text{ at } t = 0$$

$$\frac{C'}{(4\pi D t)} \sum_{i=1}^n \Delta \alpha_i \exp\left[-\frac{(x - \alpha_i)^2}{4Dt}\right]$$

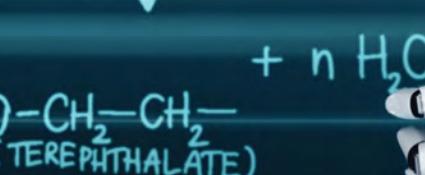
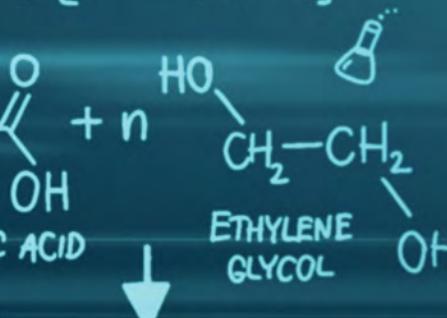
$$\frac{C'}{(4\pi D t)} \int_0^\infty \exp\left[-\frac{(x - \alpha_i)^2}{4Dt}\right] d\alpha$$

$$\frac{C'}{T} \int_{-\infty}^{x/2\sqrt{Dt}} \exp(-u^2) du$$
$$\frac{\partial T}{\partial t} = \alpha \partial T + \frac{q}{\rho c}$$

$$= \frac{2}{\sqrt{\pi}} \int_0^{\infty} \exp(-u^2) du$$

$$1, \text{ and } \text{erf}(-z) = -\text{erf}(z)$$

$$\frac{C'}{2} \left[1 + \text{erf}\left(\frac{x}{2\sqrt{Dt}}\right) \right]$$



$$\frac{V}{22.4} = \frac{N}{6.02 \times 10^{23}} = \frac{g}{MM}$$





"unsupported transit" in Eadweard Muybridge: *Animal Locomotion* (1887)

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