



## KURSPLAN

# Explainable Artificial Intelligence, 3 högskolepoäng

*Explainable Artificial Intelligence, 3 credits*

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<b>Kurskod:</b>	TEXR21	<b>Utbildningsnivå:</b>	Avancerad nivå
<b>Fastställd av:</b>	VD 2021-03-01	<b>Utbildningsområde:</b>	Tekniska området
<b>Gäller fr.o.m.:</b>	2021-08-01	<b>Ämnesgrupp:</b>	DT1
<b>Version:</b>	1	<b>Fördjupning:</b>	A1N
		<b>Huvudområde:</b>	Datateknik, Informatik

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### Lärandemål

After a successful course, the student shall

Kunskap och förståelse

- Show familiarity with concepts within Explainable AI and interpretable machine learning
- Demonstrate comprehension of current techniques for generating explanations from black-box machine learning methods
- Demonstrate comprehension of current ethical, social and legal challenges related to Explainable AI

Färdighet och förmåga

- Demonstrate the ability to select and assess Explainable AI methods

Värderingsförmåga och förhållningssätt

- Demonstrate the ability to review, present and critically assess state-of-the-art papers in relevant areas within Explainable AI

### Innehåll

This course gives an introduction to Explainable AI (XAI), providing an overview of relevant concepts such as interpretability, transparency and black-box machine learning methods. The course provides an overview of state-of-the-art methods for generating explanations, and touches upon issues related to decision-support, human interaction with AI/intelligent systems and their evaluation. In summary, the Explainable AI course covers the following topics:

- Definitions and concepts such as black-box models, transparency, interpretable machine learning and explanations.
- Decision-making and decision support, Human-Computer Interaction (HCI) and AI.
- Explainable AI.
- Methods for Explainable AI.
- Applications and examples.
- Trust and acceptance.
- Evaluation methods and metrics.

- Ethical, legal and social issues of explainable AI.

### Undervisningsformer

Web-based lectures and assignments. Three on-site sessions are mandatory for the participants; each session lasts four hours.

Undervisningen bedrivs på engelska.

### Förkunskapskrav

The applicant must hold the minimum of a bachelor's degree (i.e the equivalent of 180 ECTS credits at an accredited university) with at least 90 credits in computer engineering, computer science, information systems, mathematics, electrical engineering (both mathematics and electrical engineering should include relevant courses in computer engineering or computer science), or equivalent. The bachelor's degree should comprise a minimum of 15 credits in mathematics. Proof of English proficiency is required.

### Examination och betyg

Kursen bedöms med betygen Underkänd eller Godkänd.

The final grade for the course is based on a balanced set of assessments. The final grade will only be issued after satisfactory completion of all assessments.

Poängregistrering av examinationen för kursen sker enligt följande system:

Examinationsmoment	Omfattning	Betyg
Inlämningsuppgift	1,5 hp	U/G
Presentation	1,5 hp	U/G

### Övrigt

Explainable AI is targeted for professionals working in the industry.

This course is given under SMARTER, a competence development project within Artificial Intelligence (AI) for professionals, funded by the Knowledge Foundation; a collaboration between Örebro University (lead), Jönköping University and University of Skövde. The Knowledge Foundation supports research and professional competence development pursued in partnership with the industry, with the purpose of strengthening Sweden's competitiveness.

Explainable AI is a part-time course, 3 credits; it is expected that the participants will work 80 hours of study throughout one study period. If you apply for the course through regular admissions, there is no course fee.

### Kurslitteratur

Litteratur

The literature list for the course will be provided one month before the course starts.

The course literature comprises relevant papers from the areas of Explainable AI and interpretable Machine Learning and will be published before the course starts.