COURSE DETAIL

COMPUTABILITY, TURING MACHINES, AND GODEL'S INCOMPLETENESS THEOREMS

Country
Denmark

Host Institution
University of Copenhagen

Program(s)
University of Copenhagen

UCEAP Course Level
Upper Division

UCEAP Subject Area(s)
Mathematics Computer Science

UCEAP Course Number
143

UCEAP Course Suffix

UCEAP Official Title
COMPUTABILITY, TURING MACHINES, AND GODEL'S INCOMPLETENESS THEOREMS

UCEAP Transcript Title
COMPUTABILITY

UCEAP Quarter Units
6.00

UCEAP Semester Units
4.00

Course Description

This course is an introduction to computability theory and Gödel's incompleteness theorems. The first half of the course focuses on computability theory, and includes Recursive and primitive recursive functions; Turing machines and computable functions; basic results in computability theory including Kleene's Normal Form Theorem, the s-m-n Theorem, Kleene's Recursion Theorem, Recursively enumerable sets, the halting problem and decision problems in general; as well as hierarchy theory, relative computability, and Turing degrees. The second part of the course focuses on Gödel's first incompleteness theorem, and includes Axiom systems for number theory, representable relations and functions, arithmetization of syntax, the Fixed-Point Lemma, and Gödel's first incompleteness theorem, as well as Gödel's second incompleteness theorem.

Language(s) of Instruction
English

Host Institution Course Number
NMAK24006U

Host Institution Course Title
COMPUTABILITY, TURING MACHINES, AND GÖDEL'S INCOMPLETENESS THEOREMS

Host Institution Course Details
https://kurser.ku.dk/course/nmak24006u/2024-2025

Host Institution Campus

Host Institution Faculty
Science

Host Institution Degree
Master

Host Institution Department
Mathematical Sciences

Course Last Reviewed
2024-2025

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