# 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 Campus**

**Host Institution Faculty**
Science

**Host Institution Degree**
Master

**Host Institution Department**
Mathematical Sciences

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