

*The scientific programme:*

Monday, April 14, UEA London:

- Lecture 1. Games, trees and models. *We give a survey of various results involving the topic of using games and trees to find invariants for uncountable models.*
- Lecture 2. Foundations of mathematics and second order logic. *We consider the question of how set theory and second order logic are related to each other with a discussion of the foundational advantages and pitfalls of both.*
- Lecture 3. The mathematical theory of dependence and independence. *The general theory of dependence and independence concepts as they appear in both the sciences and the humanities is given a mathematical basis using model theoretic and set theoretic methods.*

Tuesday April 15, UEA Norwich:

- Lecture 4. Games, trees and models: EF-games on uncountable models, trees as clocks of trees, set-theoretical problems related to the ordering of trees. *This lecture gives the mathematical basics of a game-theoretic approach to identifying uncountable structures. The special role of trees is emphasized.*
- Lecture 5. Games, trees and models: Topological aspects, generalized Baire spaces, higher descriptive set theory. *This lecture focuses on the topological aspects of uncountable models, arising from our game-theoretic approach. We generalize descriptive set theory from the classical Baire space to higher Baire spaces such as the space of models of a fixed uncountable cardinality.*
- Lecture 6. Games, trees and models: Finding invariants for uncountable models of first order theories. *We relate the existence of trees as invariants of uncountable models of a given first order theory to stability theoretic properties of the theory.*

Wednesday April 16, UEA Norwich:

- Lecture 7. Foundations of mathematics and second order logic: The symbiosis of second order logic and set theory. *In this lecture the close entanglement of second order logic and set theory is laid out in detail.*
- Lecture 8 Foundations of mathematics and second order logic: The question of categoricity. Categoricity in the world of Henkin models. *The central concept of categoricity of second order theories is discussed with mathematical details. It is shown that also Henkin models manifest a surprising degree of categoricity.*

Thursday April 17, UEA Norwich:

- Lecture 9. The mathematical theory of dependence and independence: Can dependence logic be axiomatized? *A semantically defined logic of dependence and independence concepts is presented. The question to what extent this logic can be axiomatized is discussed. A complete axiomatization is presented for a fragment.*
- Lecture 10. The mathematical theory of dependence and independence: Set theoretical aspects. *The model theory of dependence logic is intrinsically set theoretic. In this lecture this is made explicit.*