

Specialized Didactics of Subject Areas

COURSE CONTENT:

Didactics of Mathematics

Topics

1. Didactics of Mathematics
 - Learning and teaching theories in Mathematics and the role of the educator
 - The educator as a designer
2. The Role of Digital Tools in Mathematics Teaching and Learning
 - Communication through digital tools
 - Digital tools for learning and teaching Mathematics
 - The concept of microworlds
3. The Mathematics Teacher as a Designer of Educational Material
 - Instructional design, teacher decision-making, and interpretation
4. Pedagogically Enriched Activities in Mathematics
 - The concept of the "half-baked microworld"
 - Micro-experiments and instructional scenarios
 - Designing educational games that integrate mathematical concepts
5. Design and Redesign of Activities with Added Pedagogical Value for Mathematics
 - Authoring tools for designing digital content for Mathematics
 - Design as a form of professional development
6. Analyzing Digital Content for Mathematics Education
 - Micro-experiments, instructional scenarios, and other digital content units as analysis objects
7. Theoretical Models for Mathematics Didactics in Educational Design
 - Communities of practice, CSCL, boundary objects
8. Mathematical Education and Creativity
 - Theoretical frameworks for mathematical creativity in students and teachers
9. Research and Teaching Practice
 - Methodological approaches and the connection between academic research and practice