



Course title: Application of computers in didactics

ECTS credit allocation (and other scores): 2,5

Semester: spring

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Natural sciences

Language: English/Polish

Number of hours per semester: 30 classes = 30 hours

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Type of classes: classes

Substantive content

CLASSES:

Computer programs in mathematics teaching, free programs in the internet for teachers, scenarios of math lessons based on mathematical programs and whiteboard, portals for math teachers.

LEARNING PURPOSE

The course on the Application of Computers in Didactics for Mathematical Studies is designed to equip students with the knowledge and skills necessary to integrate computer technology effectively into mathematics education. Through a combination of theoretical insights and practical applications, students will explore various computer tools and software tailored for educational purposes, learn to design and implement computer-based instructional materials, and critically analyze the impact of technology on teaching and learning in the field of mathematics.

On completion of the study programme the graduate will gain:

- Proficiency in utilizing various computer applications and software tools specifically tailored for educational purposes.
- Ability to integrate computer technology effectively into teaching methodologies and classroom activities in the field of mathematics.
- Competence in designing and implementing computer-based instructional materials to enhance learning outcomes in mathematical education.
- Understanding of educational theories and principles relevant to the effective integration of technology in mathematics instruction.
- Capability to evaluate and adapt existing educational software and digital resources for use in mathematical teaching contexts.
- Skill in utilizing educational data analysis tools to assess student performance and inform instructional decision-making.
- Knowledge of current trends and emerging technologies in the field of educational technology and their potential applications in mathematics education.
- Competency in troubleshooting common technical issues related to computer-based learning environments in mathematics education settings.
- Ability to critically evaluate the ethical and social implications of using computer technology in mathematics education.



- Communication skills to effectively collaborate with colleagues and stakeholders in implementing technology-enhanced teaching practices in mathematics education.

Knowledge:

Foundational Knowledge: Understand theoretical principles guiding computer technology integration in mathematics education.

Computer Tools Mastery: Proficiency in using software like interactive whiteboards, educational games, graphing calculators, etc.

Instructional Material Development: Learn to design digital lesson plans, interactive presentations, and online assessments.

Integration Strategies: Explore methods for incorporating technology to support diverse learning styles and enhance engagement.

Emerging Trends Awareness: Stay updated on new technologies like AI, VR, and adaptive learning systems for potential educational applications.

Technical Skills: Gain basic technical skills and troubleshooting abilities for smooth technology implementation.

Collaboration and Professional Growth: Learn to collaborate with peers and stay informed about advancements in educational technology.

Skills:

Teaching skills with Interactive Whiteboards and programs e.g. Whiteboard, Idroo, Geogebra, Graphic Calculus, HOT POTATOES, ExE, LearningApps, Quizziz, Padlet

Social Competencies:

Students will critically examine the ethical, social, and cultural implications of using computer technology in mathematics education. This involves addressing issues such as digital equity and access, privacy and security concerns, intellectual property rights, online safety and responsible use of technology, and promoting inclusivity and diversity in educational settings.

BASIC LITERATURE

Ángel Alberto Magreñán (Editor), Didactics of Mathematics: New Trends and Experiences, (2020), Education, Education in a Competitive and Globalizing World, Nova

SUPPLEMENTARY LITERATURE

Grandgenett, N. (2007). Mathematics and Computer Education. ProQuest Education Journal, 41(3), 276.

GeoGebra on student achievement in teaching of trigonometry. Procedia Social and Behavioral Sciences, 31, 183-187.

B Tamam and D Dasari (2021) J. Phys.: Conf. Ser. 1882 012042
