Master of Education (M.Ed.)

Title of the Course: S.Ic.2(m) Information and Communication Technologies in Education: Integration Approaches, Artificial Intelligence and its Applications

(Semester: I, II, III, IV)

Credits: 4

MM: 100 (External: 70 Internal: 30)

Contact Week 15

Introduction of the Course

The objective of the course is to enable students to develop an understanding of Information and Communication Technologies (ICTs) in Education and enable them to deepen their understanding on the theoretical frameworks, pedagogical approaches and models for ICTs integration into education. The paper aims to contribute to emerging technological trends such as Artificial Intelligence (AI) in Education including the ethical considerations. The practical elements within the course are intended to illustrate the theoretical underpinnings which make up the course.

Learning Outcomes

After completion of the course student will be able to:

1. identify and describe various web-technologies and their application in educational contexts
2. explain different theoretical frameworks and its integration into educational settings
3. select specific pedagogical approach or models to integrate into specific educational settings
4. describe key aspects and major technologies of AI and the ethical considerations
5. identify, engage and evaluate AI technologies for educational practices

Number of Units: 4 **Weeks 15 = 60 hours**

Unit 1: Technological trends and Theoretical Frameworks in ICTs integration in Education

(3 weeks = 12 hours)

- Web technologies in education: Evolution, possibilities, challenges and emerging trends
- Web based learning
- Mobile and ubiquitous learning environment and emerging trends
- Theoretical and Guiding Frameworks (TPACK, SAMR, TIM, TIP etc.) for ICT integration in educational settings

Unit 2: ICTs supported Pedagogical Approaches and Models in Education (4 weeks = 16 hours)

- Critical perspectives on ICT based Pedagogical Approaches and Models
- Problem and Project Based Learning
- Design Thinking, Design Thinking Pedagogy and Design-based Education
- ICT for assessment of/for learning at school and teacher education contexts

Head/Dean
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Unit 3: Artificial Intelligence and/in Education **(4 weeks = 16 hours)**

- Introduction to AI and Education
- Key Aspects of AI in Education
- Major Technologies (Machine learning, cloud computing, knowledge graph, natural language processing, computer vision, human–computer interaction, virtual reality and augmented reality, intelligent control, and robots) and General Framework of AI in Education.
- Reflections on AI in Education (Potentials, Pitfalls and Ethical Considerations)

Unit 4: AI based Technologies for Educational Practices **(4 weeks = 16 hours)**

- Generative AI tools and AI tutors
- AI based pedagogical and assessment tools
- AI in MOOCs
- Recent trends in AI based technologies in educational practices.

Practicum/ Suggested Projects / Assignments (Any Two)

1. Analyses various theoretical frameworks of ICTs integration
2. Critically review the AI based technological trends in Education
3. An Essay on Major Technologies of AI in Education

Note: On the basis of the above, the teacher may design his/her own relevant projects/ PBL based assignments.

Essential/ Recommended Readings

- Churi, P., Joshi, S., Elhoseny, M., & Omrane, A. (Eds.). (2023). *Artificial Intelligence in higher education : a practical approach.* Boco Raton: CRC Press.
- Holmes, W., & Porayska-Pomsta, K. (Eds.). (2023). *The ethics of artificial intelligence in education : practices, challenges, and debates.* New York: Routledge.
- Keengwe, j., & Onchwari, G. (Eds.). (2020). *Handbook of research on literacy and digital technology integration.* IGI Global.
- Koh, J., Chai, C., Wong, B., & Hong, H.-Y. (2015). *Design Thinking for Education: Conceptions and Applications in Teaching and Learning.* Springer.
- Lewis, K., Popov, V., & Fatima, S. (2024). From static web to metaverse: reinventing medical education in the post-pandemic era. *Annals of Medicine, 56*(1). doi:https://doi.org/10.1080/07853890.2024.2305694
- Meinel, C., & Krohn, T. (Eds.). (2022). *Design Thinking in Education: Innovation can be Learned.* Springer.
- Snezhana, Dineva, Intelligent e-Learning with New Web Technologies (December 12, 2021). Available at SSRN: https://ssrn.com/abstract=3983423 or http://dx.doi.org/10.2139/ssrn.3983423

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- Todd Cherner & Chyrstine Mitchell (2020): Deconstructing EdTech frameworks based on their creators, features, and usefulness, Learning, Media and Technology, DOI:10.1080/17439884.2020.1773852
- U.S. Department of Education, Office of Educational Technology. (2023). Artificial Intelligence and Future of Teaching and Learning: Insights and Recommendations. Washington.
- Voogt, J., Knezek, G., Christensen, R., & Lai, K.-W. (Eds.). (2018). *Second Handbook of Information Technology in Primary and Secondary Education.* Springer. doi:https://doi.org/10.1007/978-3-319-71054-9
- Wrigley, C., & Mosely, G. (2023). *Design Thinking Pedagogy: Facilitating Innovation and Impact in Tertiary Education.* New York: Routledge.
- Yu, S., & Lu, Y. (2021). *An Introduction to Artificial Intelligence in Education.* Singapore: Springer.

Teaching Learning Resources (Digital and others): Across Units (If any)

Nil if not given

Teaching Learning Process

The course will be taught through interactive pedagogic methods such as classroom discussion, problem based learning situations, collaborative learning tasks which enhance reading comprehension of core writings in the area and innovative projects. Reflective expression and learning will be encouraged.

Assessment Method

The assessment will be formative in nature and will factor in student participation. Individual and group tasks and assignments will be given. Summative evaluation will be done through end-semester examination.

Key words: Web Technologies, TPACK, SAMR, TIM, TIP, Problem/Project based Learning, Design Thinking, Artificial Intelligence, and MOOCs

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