Discipline Specific Electives (DSE): 04 Credits

DSE (III.3.1) ICT in Mathematics Education
Discipline Specific Elective

1. Credit Distribution of the Course

Course title & Code DSE (III.3.1)	Credits		Credit distribution of the course		Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
ICT in Mathematics Education	4	3	1	0	Undergraduate	NIL

2. Learning Objectives

ICT has a transformative impact on teaching learning practices and education administration. Blended learning is no more a choice but a norm. This course focuses on reviewing contemporary knowledge on this broad area of research. The course focuses on developing rigorous understanding of pros and cons of all aspects of ICT, impact of ICT in education in general and its impact on Mathematics Education in particular.

3. Learning Outcomes

- Scope and impact of emerging ICT in education
- Means of ICT
- ICT tools in teaching
- ICT for inclusive classroom
- Safety, security, misuse and psychological concerns of ICT usage

4. Syllabus **[45 hours]**

Unit I ICT in Curriculum and Pedagogy - TPCK framework. Instrumental Orchestration. Place and purpose of ICT in the curriculum, Means of ICT. ICT embedded pedagogy. Digital resources. Content planning and curriculum designing using ICT. Role of ICT in content differentiation. Models of Blended learning. ICT and self-paced learning. ICT for inclusive classrooms. **[12 hours]**

Unit II ICT Tools and Classroom Discourse - Augmenting teaching-learning process using social networks, blogs, discussion forums etc. Online teaching and learning. ICT tools for

assessment. Analytics for monitoring progress and achievements. Learning Management Systems. School management ERP. **[12 hours]**

Unit III Scope and Challenges of using ICT in Education - Technology in the hands of teacher and student. e-content versus authentic information. Cybercrime, Software Piracy, Online bullying, Privacy concerns. **[12 hours]**

Unit IV Ethical Practices of Using ICT - Plagiarism and fair use of ICT. Socio-economic and ethical aspects of adopting ICT. **[9 hours]**

5. Tutorials **[15 hours]**

- Searching current, high impact research publications, reviews, and case studies;
- How to read and summarize research papers;
- Propose methods to overcome ICT phobia;
- Design innovative assessment tools and analytics;
- Online Repository of digital resources for mathematics education;

6. Essential Readings

- Moursund, D. (2005). *Introduction to Information and Communication Technology in Education*. Teacher Education, University of Oregon.
- UNESCO (2012). *ICT in Primary Education: Analytical survey*.
- Athanassios, J. (ed.) (2012). *Research on e-Learning and ICT in Education*. Springer
- Oldknow, A., Taylor R. & Tetlow, L. (2010). *Teaching Mathematics Using ICT 3rd Edition*. Continuum International Publishing Group.

7. Suggestive Readings

- Abbott, C. (2001). *ICT: Changing Education*. Psychology Press.
- Kozma, R.B. (2003). *Technology, Innovation, and Educational Change: A Global Perspective: A Report of the Second Information Technology in Education Study, Module 2*. International Society for Technology in Education.
- Wilder, S.J. & Pimm, D. (2004). *Teaching Secondary Mathematics with ICT*. McGraw-Hill International.