Module Descriptions

Module designation	**ICT-Based Instructional Media Development**
Semester(s) in which the module is taught	5th /Thrird Year
Person responsible for the module	Dr. Sukarmin, M.Pd.
Language	Bahasa Indonesia (Regular Class) Bahasa Inggris (Internasional Class)
Relation to curriculum	Compulsory course
Teaching methods	Project-Based Learning, 2 workhours per week (2 x 170 minutes per week)
Workload (incl. contact hours, self-study hours)	1 CU for a bachelor's degree equals 170 minutes (50 minutes face-to-face, 60 minutes structured, 60 minutes independent learning) per week × 14 weeks, excluding mid and end-term exams. = 39.67 work hours per semester = 1.587 ECTS.
Credit points	2 Credit Units (CU) = 3,18 ECTS
Required and recommended prerequisites for joining the module	Basic understanding of learning media and computer literacy.
Module objectives/intended learning outcomes	Upon completing this module, students are expected to be able to: 1. Understand the fundamental concepts of Information and Communication Technology (ICT) and its relevance to effective and interactive chemistry learning. 2. Demonstrate responsibility and collaboration in developing ICT-based instructional media for chemistry education. 3. Design and develop ICT-based learning media such as instructional videos, animations, virtual laboratory simulations, and interactive presentations. 4. Integrate recent innovations and trends in educational technology, such as e-learning platforms, augmented reality (AR), and game-based learning, into chemistry teaching. 5. Evaluate the effectiveness of ICT-based learning media through reflection and student feedback analysis.

Content	This course focuses on the theoretical foundations and practical skills needed to develop ICT-based instructional media for chemistry learning. Main topics include: 1. Fundamental concepts of ICT in education 2. Design principles of instructional media 3. Storyboard and interface design 4. Multimedia development (audio, image, animation, and video editing) 5. Interactive learning tools (Flipbook, Adobe Flash, Articulate Storyline, Lectora) 6. Video production and editing (Microsoft PowerPoint, Camcorder, Pinnacle Studio) 7. Integration of ICT into chemistry lessons 8. Evaluation and reflection on media effectiveness 9. Development of web-based or AR-enhanced learning media Learning is conducted using Project-Based Learning (PjBL) through discussion, collaboration, simulation, and hands-on digital media creation.
Examination forms	Essay and Oral Presentation
Study and examination requirements	Student performance will be evaluated through: 1. Class participation and activity: 10.33% 2. Project and product-based assessment: 68% 3. Portfolio assessment: 16% 4. Practical performance: 4.33% 5. Written tests: 1.33% Forms of examination: project reports, product evaluation, reflective journals, portfolio documentation, presentation, and written exams.
Reading list	1. Fenrich, P. (1997). *Practical Guidelines for Creating Instructional Multimedia Applications.* USA: Harcourt Brace College Publishers. 2. Heinich, R., Molenda, M., Russell, J. D., & Smaldino, S. E. (1999). *Instructional Media and Technologies for Learning.* USA: Prentice Hall. 3. Ellen Finkelstein & Gurdy Leete. (2002). *50 Fast Flash MX Techniques.* Indianapolis: Wiley Publishing. 4. CambridgeSoft Corporation. (2006). *User's Guide Chem & Bio Office Desktop 2008 for Windows.* 5. Sadiman, A. S. (2009). *Media Pendidikan.* Jakarta: Rajawali Press. 6. Sony Creative Software Inc. (2009). *Sound Forge Pro 10 User Guide.* 7. Dwiningsih, K., Fajaroh, F., Parlan, P., Munzil, M., & Habiddin, H. (2022). *3D Molecular Interactive Multimedia for Building Chemistry Students' Spatial Ability. International Journal of Emerging Technologies in Learning (iJET)*, 17(14), 253–262.