



UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY EDUCATION
Jl. Colombo No. 1, Karangmalang, Yogyakarta
Phone : +62 274 548203 e-mail: kimia@uny.ac.id
Website: pendidikankimia.fmipa.uny.ac.id

Bachelor of Education in Chemistry

MODULE HANDBOOK

Module name:	ICT Application for Chemistry Teaching and Learning
Module level,ifapplicable:	Undergraduate
Code:	MPK 6204
Sub-heading,ifapplicable:	-
Classes,ifapplicable:	2
Semester:	4 th
Module coordinator:	Dr. Das Salirawati, M.Si.
Lecturer(s):	Marfuatun, S.Pd.Si.,M.Si. ; Dina, S.Pd.,M.Pd.; Anggiyani Ratnaningtyas Eka Nugraheni, S.Pd.Si.,M.Pd.
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory Course
Teaching format / class hoursperweekduring the semester:	100 minutes lectures, 120 minutes individual study, and 120 minutes structured activities per week.
Workload:	Total workload is 90.67 hours per semester which consists of 100 minutes lectures, 120 minutes structured activities, and 120 minutes individual study per week for 16 weeks.
Creditpoints:	2 SKS (3.28 ETCS)
Prerequisites course(s):	-
Course Outcomes:	After taking this course, the students are expected to be able to: CO1. be responsible for applying technology in chemistry learning. CO2. understand ICT and its integration in Chemistry learning, understand the basics of ICT-assisted learning, understand the principles of ICT-based learning, develop IT-based learning plans. CO3. develop chemical learning media for computer assisted instruction, develop chemical learning media for mobile-based learning, apply ICT-based non-conventional Chemistry learning models and utilize ICT as an ICT-based delivery system for Chemistry learning.
Content:	This course is a compulsory subject for students of Chemistry Education FMIPA UNY. In this global era, ICT is seen as an important tool in learning, including learning Chemistry. ICT can help learning both as a learning media, as well as a means of delivering learning content in a delivery system. As a media, ICT helps students to understand learning material. As a tool in a delivery system, ICTs can increase flexibility in accessing learning content. By studying this course, students are expected to be able to understand the principles of ICT-based chemistry learning and be competent in utilizing ICT for

	<p>learning chemistry both as a means of delivering learning content and as a learning media. This course discusses the notion of ICT, the integration of ICT in chemistry learning, the understanding and implementation of ICT-based chemical learning content systems, the understanding of learning media, the roles and types of ICT-based learning media, the planning and selection of chemical learning media, development, validation and evaluation ICT-based chemical learning media, as well as the implementation of ICT in chemistry learning. After this learning, students are expected to be able to develop ICT-based chemistry learning media and use it as virtual learning content by utilizing ICT as a delivery system.</p>															
<p>Study/exam achievements:</p>	<p>Attitude assessment is carried out at each meeting by observation and/or self-assessment techniques using the assumption that basically every student has a good attitude. The student is marked very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not taken into account in the final grades, but as one of the requirements to pass the course. Students will pass from this course if at least have a good attitude. The final mark will be weight as follow:</p> <table border="1" data-bbox="628 994 1444 1272"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CO1, CO2, CO3.</td> <td>Assignments Quiz Final Exam Participation</td> <td>Presentation / written test</td> <td>30% 20% 30% 20%</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1, CO2, CO3.	Assignments Quiz Final Exam Participation	Presentation / written test	30% 20% 30% 20%				Total	100%
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1	CO1, CO2, CO3.	Assignments Quiz Final Exam Participation	Presentation / written test	30% 20% 30% 20%												
			Total	100%												
<p>Forms of media:</p>	<p>Board, LCD Projector, Laptop/Computer</p>															
<p>References:</p>	<p>Tassos Anastasios Mikropoulos, (2018), Research on e-Learning and ICT in Education Technological, Pedagogical and Instructional Perspectives, Springer International Publishing.</p> <p>Hideyuki Kanematsu & Dana M. Barry, (2016), STEM and ICT Education in Intelligent Environments, Springer International Publishing.</p> <p>Kam Cheong Li Tak-Lam Wong, Simon K.S. Cheung Jeanne Lam, Kwan Keung Ng (Eds.), (2014), Technology in Education, Transforming Educational Practices with Technology, First International Conference, ICTE.</p> <p>Birkland, Johanna L. H., "A Theory of ICT User Types: Exploring Domestication and Meaning of ICTS through Comparative Case Studies" (2013). The School of Information Studies- Dissertations. Paper 77.</p> <p>S.M.H. Collin, (2004), Dictionary Of ICT Fourth Edition, Peter Collin Publishing</p> <p>Ranjan Kumar Sahoo, (2019), Exploring the Changes in Teaching Strategies Enabled by Information and Communication Technology, International Journal of Theory and Application in Elementary and Secondary School Education 1(2):66-80</p>															

	<p>Dewi, Ratna Kumala; Wardani, Sri; Wijayati, Nanik; Sumarni, Woro, (2019), Demand of ICT-Based Chemistry Learning Media in the Disruptive Era, International Journal of Evaluation and Research in Education, v8 n2 p265-270</p> <p>Nechypurenko, Pavlo P, (2018), Using ICT as the Tools of Forming the Senior Pupils' Research Competencies in the Profile Chemistry Learning of Elective Course "Basics of Quantitative Chemical Analysis", roceedings of the 1st International Workshop on Augmented Reality in Education Kryvyi Rih, Ukraine</p> <p>Paksi Manggala Putra, Jaslin Ikhsan, (2015). Development Of Android Mobile Game "The Professor" As Chemistry Learning Media In Senior High School On Hydrocarbon And Petroleum, Konferensi Internasional (ICERI2015),</p> <p>Arif Yoga Pratama, Jaslin Ikhsan, (2015). Integration Of Ict-Based Multimedia Into Hybrid Multimodal Learning At Senior High School To Improve Students' achievement, Konferensi Internasional (ICERI2015),</p>
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PLO and CO mapping

	PLO					
	Attitude		Knowledge	Specific Skill	General Skill	
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CO1			√			
CO2					√	