

## **CORRELATION BETWEEN LEARNING MODELS AND LEARNING OUTCOME OF THE COURSES**

The suggested models to be applied in learning are:

- a. *Small group discussion (SGD)*
- b. *Simulasi/ Demonstrasi (S/D)*
- c. *Discovery Learning (DL)*
- d. *Self-Directed Learning (SDL)*
- e. *Cooperative Learning (CL)*
- f. *Collaborative Learning (CbL)*
- g. *Contextual Instruction (CI)*
- h. *Project-Based Learning (PjBL)*
- i. *Problem-Based Learning/ Inquiry (PBL/I)*

Student Outcome	Program Indicator	Learning Model Suggested								
		SGD	SD	DL	SDL	CL	CbL	CI	PjBL	PBL
Attitude										
The graduates of Bachelor of Education in Chemistry demonstrate religious spirit, moral, ethics, and characters of Indonesia in a community, society, and state life	1. Devote to the One Almighty God and able to show religious attitude;	√	√		√	√	√	√		
	2. Uphold the value of humanity in performing tasks based on religion, moral, and ethics;	√	√		√	√	√	√		
	3. Contribute in improving quality of life in society, nation, state and the betterment civilizations based on <i>Pancasila</i> (Five Principles);	√	√		√	√	√	√		
	4. Take a role as a good citizen who proud of the homeland, have nationalism, and responsible to the nation and state;	√	√		√	√	√	√		
	5. Respect to the culture diversity, view, religion, and belief, also idea or other's invention;	√	√		√	√	√	√		√
	6. Cooperative and have social awareness also concern to the society and environment;	√	√		√	√	√	√		
	7. Obey the rules and discipline in society and nation living;	√	√		√	√	√	√		
	8. Internalize value, norm, and academic ethics;	√	√		√	√	√	√		
	9. Show responsibility on occupation and expertise independently; and	√	√		√	√	√	√	√	
	10. Have integrity, commitment, sincerity to improve attitude, value, and students' ability based on local wisdom value and noble character also have motivation to do a good deed for students and society.	√	√		√	√	√	√	√	
The graduates of Bachelor of Education in Chemistry demonstrate independence both individual and group work	11. Master the basic of entrepreneurship				√	√	√	√		
	12. Master the skill of entrepreneurship			√	√	√	√	√	√	√
	13. Internalize spirit of independency, struggle, and entrepreneurship;	√			√	√	√	√	√	√
Knowledge										

Student Outcome	Program Indicator	Learning Model Suggested								
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The graduates of Bachelor of Education in Chemistry apply the concepts, principles, laws, and theories of chemistry, science, education, and chemistry education that are continuously updated as a part of lifelong learning	14. Master the theory concept about structure, dynamics, and chemicals energy, also the basic principles separation, analysis, synthesis, and the characteristics;	√		√		√	√	√		√
	15. Apply Chemistry knowledge in various case	√	√	√		√	√	√	√	√
	16. Master theoretical concept about education theory, students development, knowledge of Chemistry pedagogy, learning methods, curriculum, and learning evaluation;	√		√		√	√	√		√
	17. Master the basic of scientific method and the use of Information and Communication Technology (ICT) principles in Chemistry learning.					√	√	√	√	√
	18. Master the principle standard of job safety and security, manage laboratory and tools utilization also how to operate chemistry instrument;		√			√	√	√	√	√
<b>Skills</b>	<b>General Skills</b>									
The graduates of Bachelor of Education in Chemistry adapt the ability for critical and creative thinking in dealing with problems in their careers or personal lives	19. Able to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing knowledge and technology which concern and apply humanities value based on self-expertise.	√	√			√	√	√		
	20. Able to review development implication or knowledge and technology implementation which concern and apply humanities value related to self-expertise based on rules, procedures, and scientific ethics in order to result solution, idea, design or art criticism;	√				√	√	√		√
	21. Able to compile the review of scientific description result in the form of essay or final project, and upload it on university website;	√			√	√	√	√		√

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	22. Able to take right decision in the context of solving the problem in their own expertise based on the result of information and data analysis;	√			√	√	√	√		√
	23. Able to document, save, secure, and discover data to guarantee the validity and avoid plagiarism;	√	√		√	√				
The graduates of Bachelor of Education in Chemistry implement cooperative skills in conducting their duties and solving problems	24. Able to work independently, quality, and measurable;	√			√	√	√		√	
	25. Able to keep and develop network with supervisor, colleague, friends inside or outside their organizations;					√	√		√	
	26. Able to be responsible to the group work achievement and perform supervision also evaluation to the work completion which is delegated to their worker under their responsibility;					√	√	√	√	√
	27. Able to conduct self evaluation to group work under their responsibility and able to manage self direct learning; and					√	√	√	√	√
	<b>Specific Skills</b>									
The graduates of Bachelor of Education in Chemistry adapt scientific work skills and chemical learning skills that are continuously updated as a part of lifelong learning to solve problems related to chemistry and chemistry education	28. Able to plan and conduct chemistry learning at school guided appropriate to the materials and students character through scientific approach by using various learning sources and media based on knowledge, technology, and art, and environment potentials, corresponding to content standard, process, and evaluation, so students have scientific process skills, critical thinking, creative, and able to solve the problem.			√		√	√	√	√	√

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	29. Able to evaluate Chemistry learning at school corresponding to content standard, process, and evaluation		√	√					√	√
	30. Able to identify Chemistry learning problem and choose alternative solution based on theory and research findings also implement it into research guided.	√	√	√					√	
	31. Able to plan, conduct, and evaluate experiment in order to perform scientific approach by utilizing potential resources also concern on job safety and secure standard aspect.		√	√	√	√	√	√	√	
	32. Able to plan, conduct, and evaluate extracurricular supervision at school.		√	√	√				√	√