THE INSTITUTE OF EDUCATIONAL SCIENCES

CURRICULUM FOR THE CONTINUOUS TRAINING OF BIOLOGY TEACHERS

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PRELIMINARY

Curriculum of the continuous training of Biology teachers represents a normative act which orients and monitors the conditions of didactic staff proficiency training activities, expressed in professional contents and competences.

This curriculum refers to teachers of Biology and is designed through the perspective of transition from the objective-centered curriculum to the competence-centered curriculum.

Last decades the rapid and unforeseeable social evolutions have forced a reconsideration of the role and functions of the teacher. Thus, continuous training becomes a permanent necessity to be able to face the informational flow and to value continuously new action strategies and techniques in forming student's personality.

The application of the competence-centered curriculum contributes to students' personality formation and will be effecient only if the educational process is centered on student and on well established final results.The purpose of the curriculum of the continuous trainig of Biology teachers consists of the development of professional competences for Biology through the perspective of school skills formation and educational value promotion in the process of students' personality formation.

I. CONCEPTUAL REFERENCES

The curriculum of the continuous training of Biology teachers aims to develop professional skills to ensure a quality in pre-university education.

Competent teachers contribute to school effectiveness by engaging themselves into many cooperative activities with other professionals to create educational policy, to take part in curriculum development and personal development.

The strategic options in educational policy was and is that of the quality in education. School is required to meet the challenges of present and future expectations, to give adequate answers to complex situations, to reflect inside what is happening in the society. The teacher as an agent of change must combine the conditions of competence.

Professional competence is the ability to apply, transfer and combine knowledge and skills in various work situations and environments to perform the activities required by the work place; all being realized at the quality level specified in the occupational standard.

Thus, the current curriculum emphasizes the development of 5 professional competences of the didactic staff like:

- Epistemological Competence;
- Communicative Competence;
- Managerial Competence;
- Investigational Competence;
- Metacognitive Competence.

Epistemological Competence is structured into three components: specialty component; psychopedagogical component and cultural component.

Managerial Competence aims taking the appropriate decisions in order to realize the objectives set and to obtain the effective results.
Communicative Competence concerns the teacher's mastery to develop educational messages depending on the psychological and pedagogical field peculiarities.
Investigational Competence generally allows teachers to capitalize pedagogical research towards regulation and self-regulation of the educational process; and specially, to make various investigations in order to improve the educational process.
Metacognitive Competence. "Metacognition" means the assembly of knowledge that the individual has about the functioning of his/her own cognition; and the controlling processes which direct cognitive activities during their execution.

II. **Key / Transverse Competences**

1. Learning-to-learn competences ;
2. Communication in the mother tongue/ official language;
3. Communication in a foreign language;
4. Action-strategic competences;
5. Self-knowledge and self- achivement competences;
6. Interpersonal, civic amd moral competences;
7. Mathematical literacy and basic competences in science and technology;
8. Digital competence in information and communication technologies (ICT);
9. Cultural and intercultural competences (to receive and create new values);
10. Enterpreneurship competences.

III. **Specific Professional Competences:**

- ***Epistemological Competence.***
- ***Managerial Competence.***
- ***Communicative Competence.***
- ***Inverstgational Competence.***
- ***Metacognitive Competence.***

IV. MANAGEMENT OF TRAINING CURRICULUM

Nr. d/o	**Modules**	**Number of hours**		
		Theoretical	Practical	Total
1.	Module **A**: *Psycho-predagogy of Interactive Education.*	*12*	*24*	*36*
2.	Module **B**: *Axiology and Praxiology of Specialty Subject.*	*34*	*70*	*104*
3.	Module **C**: *ICT Use and Implementation of Educational Software.*	*2*	*8*	*10*
4.	**Total**	**48**	**102**	**150**

V. PROCESS, CONTENTS AND TRAINING ACTIVITIES ACQUISITIONS

Nr. d/o	**Process Acquisitions**	**Contents**	**Trainig Activities**
Module A: *Psycho-pedagogy*			
1.	Psycho-pedagogical skills towards school competence concept, depending on students'age.	• Student-centered Education Paradigm (SCE). Designing teaching approach through the perspective of SCE. School Competence concept.	ERRE (*Evocation, Realization of meaning, Reflection, Extension*) Case Study.
2.	Skills to organize educational activities during class mastering lessons.	• Praxiology of class mastery activity.	Brainstorming, Group Work.
3.	Skills to organize educational process in the classroom.	• Correlation of students'psychological needs with educationmal process. Psychological age crisis and growing students'personality. Mativation as a premisis and an effect of learning.	Case study, Panel Discussion, Psychopedagogical Tests.
4.	Skills to organize educational process in the classroom.	• Implementing the inclusive principle in pre-university education.	Case Study, Excursion, Film.
5.	Intellectual acquisitions for written work elaboration in	• Verification and admission of written work in pedagogy.	Tests

	psycho-pedagogy.		
Module B: ***Axiology and Praxiology of Specialty Subject***			
6.	Intellectual acquisitions for continuos school curriculum development.	• Trends in development of Biology education development in the Republic of Moldova. • Modernization of competence-centered Biology curriculum for secondary and high-school level.	Tehnica SWOT, Debates, *„Water Lily Flower"* Method, Freewriting.
7.	Psycho-pedagogical skills towards the concept of scientific knowledge competence.	• Correlation of competences, subcompetences, objectives, contents, learning activities and evaluation in Biology school curriculum. Didactic Planning.	Brainstorming, „Think-Pair-Share" Technique, Analitical Refelection.
8.	Didactic principles application skills in Biology classes.	• Didactic principles achievement in Biology classes.	*„Philips"* Method.
9.	Pragmatic acquisitions for school competence formation methodology.	• Student-centered teaching-learning-evaluation strategies and competence formation strategies in Biology.	ERRE, T-Graph
10.	Pragmatic acquisitions for school competence formation methodology.	• Formative-participatory methods.	T-Graph, Problem solving, Method 3-2-1.
11.	Skills to design competence-focused didactic plans.	• Competence formation methodology in studying Biology.	Problem Solving, Case Study.
12.	Didactic planning skills in the context of scientific knowledge competence formation.	• Project method and its role in competence formation. • Modern Biology lesson.	Project, Investigation Method, *Snowball* Method
13.	Practical acquisitions for experiment realization in Biology.	• Bilogy experiment: ➢ Plant Physiology; ➢ Animal Physiology; ➢ Human Physiology.	Investigation, Experiment, Lab work, Demonstration, Problem Solving
14.	Intellectual acquisitions to form inter- and	• Intra- and interdisciplinary integration in Biology through the context of school	Starbursting, Method 3-6-5

	transdisciplinary concepts in Biology classes.	competences formation.	
15.	Pragmatic acquisitions for formative and summative evaluation test designing, focused on school comptence formation.	• Strategies of school result evaluation, standards of competence.	Test, Brainstorming, Clustering.
16.	Skills to elaborate ecological projects	• Ecologic culture education and ecologic conscience development. Environment and human health.	*PRES* Method, Investigation
17.	Acquisitions for solving problems in Genetics.	• Methodology of solving genetic problems.	Problem Solving
18.	Skills of educational process organization in the context of competence formation during Biology classes.	• Teaching experience: achievements and perspectives. • Specialty Course Work checking and admission.	Power Point, Debate, Reflections, Self-evaluation.
		Pedagogical Practice	
20.		• Methodological Counseling	
Module C: ICT use and implementation of educational software			
21.	Skills on applying Computer- Assisted Instruction.	• Power Point Presentation Editor • Computer -Assisted Instruction.	Computer-Assisted Instruction

VI. METHODOLOGICAL SUGGESTIONS

Curriculum for continuous training of Biology teachers aims methodological activities to develop teacher's professional competence. The most effictive methods of working with trainees are: training, lecture, seminars, methodological counceling. Within these activities there coud be used some other strategies like: experiment, problem solving, investigation, SWOT, etc.

For Biology the scientific knowledge methods are: observation, discovery of all that is alive which allows its study in lab conditions.

For this reason, the experiment keeps a prominent place in Biology teaching, learning and assessment. Moreover, it is required to apply active methods by which

the trainees: discover new things by themselves, critically analyze and argument their own decisions; thus encouraging cognitive and actional autonomy.

The teacher must be an expert in teaching technology and a successful practioner in teaching this subject, but at the same time the one that shows initiative, is creative, flexible, open to new, with irreproachable conduct, attentive and sensitive to the students' needs and problems.

With the accumulation of experience and development of pedagogical ability, a person acquires pedagogical mastery, which relates a more superior level of the initial „pedagogical competence" and designates a high level of competence achieved through training.

In this context, the trainer is a moderator in trainees' oganization and guidance, offering assistance on request.

VII. SUGGESTIONS FOR ASSESSMENT

The assessment of trainees is done by professional qualifications and credits. Among the methods of evaluation are: the portfolio, questionnaire, test, project, self-evaluation. Focusing on professional competence development it is important for teachers to monitor their activity, to be able to reflect on their performance, be receptive to everything new, and to find ways to progress and self-training.

Reference:

1. Ministerul Educaţiei al Republicii Moldova. *Biologia. Curriculum şcolar pentru clasele a V-a – a IX-a.* Chişinău, Editura Ştiinţa, 2010.
2. Ministerul Educaţiei al Republicii Moldova. *Matematică. Curriculum pentru clasele a X-a – a XII-a.* Chişinău, Editura Ştiinţa, 2010.
3. Ministerul Educaţiei al Republicii Moldova, Biologia. Ghid de implementare a curriculumului modernizat pentru treapta liceală, Cartier, 2010.
4. Achiri, I., Bolboceanu, A., Guţu, V., Hadîrcă, M., 2009, *Evaluarea standardelor educaţionale. Ghid metodologic.* Chişinău.
5. Alexeiciuc, A., Velişco, N., 2003, *Ecologia şi protecţia mediului.* Tipografia S.A. Busines-Elita Chişinăului.
6. Amable, T., 2011, *Creativitate şi inteligenţă emoţională*. Iaşi, Polirom.
7. Barna, A. et al., 1998, *Predarea biologiei în învăţământul gimnazial*. Bucureşti.
8. Bîrnaz, N., Leşanu, M., Rudic, G., 2011, *Biologie*, *cl. a 12-a*, Editura Prut Internaţional.
9. Botnaru, O., 2002, *Biologie cl. X*. Chişinău.
10. Cartaleanu, T., Ghicov, A., 2007, *Predarea interactivă centrată pe elev.* Ghid metodologic pentru formarea cadrelor didactice din învăţământul preuniversitar. Chişinău, Editura Ştiinţa.
11. Chicu, V., 1997, *Determinarea nitraţilor în unele plante de cultură*. În: Chimia, № 1-2, revistă pentru profesori şi elevi. Chişinău.
12. Chicu, V., 2000, *Formarea atitudinilor ecologice la copiii de vîrste preşcolară.* Ghidul educatorului, perspective de tendinţe moderne în educaţia şi instruirea copiilor din grupele pregătitoare (5-7 ani), vol. II. Chişinău.
13. Ciocoi, V., Donea, V., Rudic, V., Salaru, V., 2001, *Biologie, cl. a X-a.* Chişinău, Lumina.
14. Clegg, B., Brichi, P., 2003, *Creativitatea. Curs Rapid, 150 de tehnici şi exerciţii*, Iaşi, Polirom.
15. *Concepţia învăţământului de biologie*, 2000.
16. Copil, V., Dordea, M. et al., 2002, *Biologie, cl. XI-a*. Bucureşti, Editura Teora Educaţional.
17. Cosovan, O., Ghicov, A., 2007, *Evaluarea continuă la clasă.* Ghid metodologic pentru formarea cadrelor didactice din învăţământul preuniversitar. Chişinău, Editura Ştiinţa.
18. Cozari, T., 2011, *Biologie*, cl. a 6-a, Chişinău, Ştiinţa.
19. Cristea, S., 2000, *Dicţionar de pedagogie*. Chişinău – Bucureşti.
20. Dandara, O., Bernaz, N., 2002, *Sarcini didactice*. Chişinău, Pro Didactica.
21. Dencicov, L. et al., 2004, *Didactica generală a biologiei*. Chişinău.
22. Duca, M., Dencicov L. et al., 2008, *Biologie*. *Procese şi sisteme vitale, cl. a 11-a*. Editura Prim, Chişinău.
23. *Educaţia pentru sănătate, cl. I-XII*., 2004, Ghid metodologic. Bucureşti.
24. Pogolşa, L., Bucun, N., Guţu, V. (coord.) et al. 2009, *Evaluarea curriculumului şcolar - perspectivă de modernizare.* Chişinău, Tipografia Print-Caro SRL.
25. Fryer, M., 1996, *Predarea şi învăţarea creativă*. Chişinău.

26. *Ghid Ecologic, REC Moldova*. Chişinău, Editura Continental Grup, 2004.
27. Godoroja, R. et al., 2001, *Experienţe pedagogice avansate la chimie şi biologie*. Chişinău, Pro Didactica.
28. Guţu, V., Achiri, I., 2009, *Evaluarea curriculumului şcolar.* Ghid metodologic. IŞE, Chişinău.
29. Iordache, I.,1995, *Metodica predării biologiei*. Iaşi.
30. Leşanu, M., 2007, *Ghid de implementare a curriculumului modernizat în învăţământul liceal. Biologie*. Chişinău, Editura Ştiinţa.
31. Lisievici, P., 2002, *Calitatea învăţământului şi curriculum.* În: Revista de Pedagogie, Chişinău.
32. *Modernizarea standardelor şi curricula educaţionale - deschidere spre o personalitate integrală*. Materialele Conferinţei Ştiinţifice Internaţionale, Vol. I-II. IŞE, Chişinău, 2009.
33. Neculiseanu, Z., Zubcov, E., Ungureanu, L., Negru, M., 2007, *Monitorizarea calităţii apei în baza macronevertebratelor acvatice*. Chişinău, Continental Grup.
34. Negru, A., Şabanov, G., Gînja, Gh., 2002, *Plantele rare din flora spontană a Republicii Moldova*. Chişinău, USM.
35. Oprea, O., 1992, *Didactica Nova. Teoria instruirii*. Chişinău, Editura Lumina.
36. Pâslaru, Vl., Cabac, V., 2002, *Evaluarea în învăţământ.* Ghid metodologic. Chişinău.
37. Guţu, V., (coord.), 2009, *Psihopedagogia centrată pe copil.* Chişinău, USM.
38. Raicu, P. et al, 1987, *Biologia, cl. XII-a.* Bucureşti.
39. Rychen, D.S., Salganik, L.S., 2000, *Definition and Selection of Key Competencies*, INES General Assembly 2000. A Contribution of the OECD Program DeSeCo.
40. Silistraru, N., 2006, *Valorile educaţiei moderne*. Chişinău.
41. Sinclair, M., 2004, *Learning to Live Together, Building skills, values and attitudes for the twenty-first century,* International Bureau of Education.
42. Stockley, C.,1993, *Dicţionar ilustrat de biologie*. Oradea, Editura Aquila.
43. Stoica, A., 2003, *Evaluarea progresului şcolar: de la teorie la practică.* Bucureşti, Humanitas Educaţional.
44. Stoica, A., Musteaţă, S., 2001, *Evaluarea rezultatelor şcolare*. Ed. II. Chişinău.
45. Stoica, A., Musteaţă, S., 2003, *Evaluarea rezultatelor şcolare.* Ghid metodologic. Chişinău.
46. Tarhon, P. et al., 2004, *Didactica generală a biologiei*. Chişinău.
47. *Tematica interviului de performanţă*. În: Făclia, 27 ianuarie. 2007.
48. Toma, N., 1999, *Biologie, cl. IX*. Bucureşti.
49. Ungureanu, I., Postolache-Călugăru, A., Melian, I., 2007, *Biologie profil real/umanist, cl. a 10-a,* Chişinău, Editura Bons Offices.
50. Voiculescu, E., 2001, *Factori subiectivi ai evaluării şcolare*. Bucureşti, Aramis.