Didactics of mathematics

Instructor: Lector.dr. Christina-Theresia Dan

Cod: -
Cycle I: LICENCE
Second Year , Semester IV, Cours 28 hours, Seminar 28 hours
Nr. of credits: 5
Domain: Mathematics
Type : optional
Category : specialized discipline
Objectives:

To understand and to use the specific terminology in different contexts correctely; to know: the structure of the pre-university education system, how to realize and to utilize the school documents (textbooks, analytical programmes, annual planning, learning unit plans), to identify properly the educational objectives for an efficient planning of the didactic activity, the learning and teaching methods, the teaching aids; to have a knowledge of defining, in a correct way, the mathematical concepts; to know some techniques of examination and of objective evaluation of the students; to train the students for the teaching practice period.

Necessary background: The courses of: pedagogy, psychology, algebra, geometry, mathematical analysis given in the privious year of study.

Evaluation form : Exam (E)

Contents:

C_1 :   *Didactics.* The concept. The principles of didactics.

C_2 :   *The object of the didactics of mathematics.* The tasks of the mathematics didactics. Instructional strategies. Methodology. Teaching aids. Operational objectives. Teachers' training.

C_3 :   *The theory and the methodology of the curriculum.* Educational plans. Curriculum at school decision. Curricula results.

C_4 :   *The projection of the instructive activities.* Stages of projection. Analytical programmes. Projection of the didactic step. Programmes for optional activities.

C_5 :   *Organizing forms of instruction.* Lesson types. Projection. The evaluation of the lesson efficiency.

C_6 :   *The evaluation in the process of education.* The roles of appraisement. Methodes of evaluation. Evaluation and forms of examination. Marking.

C_7 :   *Didactic communication.*

C_8 :   *Defining mathematical concepts.*

C_9 :   *Elements of mathematical logics.* Propositional calculus. Predicates. Logic quantifiers. Direct and converse theorems. Deductive and inductive reasoning.

C_{10} :   *Proof by contradiction (Reductio ad absurdum). Mathematical induction. Applications.*

C$_{11}$ – C$_{14}$:   *Solving problems.* Dirichlet's box. Inclusion-exclusion principle. Geometrical locus. Compass and straightedge construction.

Bibliography:

1.   Becheanu, M., Niţă, C., Ştefănescu, M., Dincă, A., Purdea, I., Ion, D. I., Radu, N., Vraciu, C., *Algebră pentru perfecţionarea profesorilor,* Editura Didactică şi pedagogică, Bucureşti, 1983.
2. Brânzei, D., Brânzei, R., *Metodica predării matematicii*, Editura Paralela 45, 2000.
3. Dan, C., Chiosa, S. T., *Didactica matematicii*, Editura Universitaria, Craiova, 2008.
4. Joiţa, E., *Curs de pedagogie şcolară*, Reprografia Universităţii din Craiova, 2001.
5. Lupu, C., Săvulescu, D., *Metodica predării geometriei,* Editura Paralela 45, 2000.
6. MEC, C.N.C., *Ghid metodologic, Aria curriculară. Matematică şi Ştiinţe ale naturii, liceu,* Editura Aramis, 2001.