SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	Babeș-Bolyai University, Cluj-Napoca
1.2 Faculty	Faculty of Geography
1.3 Department	Physical and Technical Geography Department
1.4 Field of study	Geography
1.5 Study cycle	Master
1.6 Study programme / Qualification	Resources and Risks in Hydric and Atmospheric Environment

2. Information regarding the discipline

2.1 Name of the discipline	Hydric synthesis and regionalizations, GME4103						
2.2 Course coordinator	Gheorghe ȘERBAN, PhD. Associate Professor						
2.3 Seminar coordinator	Gheorghe ȘERBAN, PhD. Associate Professor						
2.4. Year of study	**I**	2.5 Semester	**I**	2.6. Type of evaluation	Exam	2.7 Type of discipline	Mandatory

3. Total estimated time (hours/semester of didactic activities)

3.1 Hours per week	4	Of which: 3.2 course	2	3.3 seminar/laboratory	2
3.4 Total hours in the curriculum	56	Of which: 3.5 course	28	3.6 seminar/laboratory	28
Time allotment:					hours
Learning using manual, course support, bibliography, course notes					38
Additional documentation (in libraries, on electronic platforms, field documentation)					16
Preparation for seminars/labs, homework, papers, portfolios and essays					24
Tutorship					5
Evaluations					6
Other activities:					5

3.7 Total individual study hours	94
3.8 Total hours per semester	150
3.9 Number of ECTS credits	6

4. Prerequisites (if necessary)

4.1. curriculum	• Applied mathematics, Initiation in Computer science and GIS, Potamology, Limnology, Natural flow Regime of the rivers, Hydrometry and primary processing of data, Hazard and risk in hydric environment, Erosion, transport and settling silt
4.2. competencies	• ability to perform graphics mathematical applications (hydrographs, correlations etc.) and classic or computerized spatialization of the hydric parameters • knowledge of the modes of flow expression • knowledge of the flow components, of their role in water balance and their dependence on various factors (natural or anthropogenic)

5. Conditions (if necessary)

5.1. for the course	• the laboratory of Hydrometry with specific devices, instruments and a video projector
5.2. for the seminar /lab activities	• the laboratory of Hydrometry with specific devices and instruments • computer network with dedicated software (Excel, SPSS, CurveExpert, MatCad, Hyfran, ArcView, ArcGIS, free source and open source)

6. Specific competencies acquired

Professional competencies	• the students will acquire an elevated specialized vocabulary, according to the made professional orientation; • the students will be able to realize different mathematical and statistical applications used in the elaboration of the hydric syntheses and regionalisation; • they will be able to establish the connection between the regime of atmospheric precipitation and surface and groundwater flow regime, as well as the dependence of these components of certain natural and anthropogenic factors; • they will apply various direct and indirect methods of hydric parameters obtaining in areas with a weak hydrometric monitoring; • they will apply the GIS technique in the domain, with the development of high expressiveness digital applications (spatial representations of the parameters, computer modelling etc.); • the acquisition of the knowledge and skills implied by the conception, structuring and drafting of a scientific study, in accordance with all the requirements for knowledge and ethical nature • being a discipline with deeply practical traits, related to water management, the students will get skills on carrying out studies on specific issues.
Transversal competencies	• learning the strategies of effective and responsible work, based on punctuality, seriousness and personal responsibility, on the principles, academic and professional ethics code rules and values; • the students will understand the scientific and economic importance of water, in the context of the development of society and expansion of human habitats; • they will be able to achieve different classical and virtual technical applications on the topics of specialty and interference with other related domains; • the students will be able to engage in the conduct of the multidisciplinary studies; • the assimilation of the techniques and behaviours of effective work in multidisciplinary team on different hierarchical levels: ethics attitude in relation with the group, respect for diversity and multiculturalism, acceptance of diversity of opinion and of criticism, taking the specific role of team work, respecting the principles of bioethics.

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	• the development of the hydrological data analysis and interpretation capacity with the application of methods of synthesis, generalizations and regionalisation aimed to extend these data in spatial and temporal sense
7.2 Specific objective of the discipline	• the knowledge of mathematics and statistics bases used in the preparation of synthesis and regionalizations; • the knowledge of the legalities underlying the hydrological processes and phenomena; • the knowledge of the methodology of the cover with the hydrological data of some areas poorly monitored; • the development of students spatial thinking and of the skills of thematic maps realization and, also, of the synthesis materials, through the use of the computer applications and the specific techniques • the development of professional skills in order to carry out the activity in the hydrological practice • knowledge of the geographical methodology, of it interference with other areas, by default, from the perspective of ethics in research; • knowledge of the main legislative content and of national and international legislation provisions relating to intellectual property rights and obligations arising from these.

8. Content

8.1 Course	Teaching methods	Remarks
1. The ethics of quotation. Aspects of ethics in research work.	- methods of training based on the action of the teacher (storytelling, description and explanation), the use of the sketches and the drawing on the board, use of the projector for presentation of images, maps, satellite images, animation elements; - methods of interactive training based on the interaction teacher-	**2 hours**
2. The style of communication and the requirements of scientific language. The rules of quoting. The concept of plagiarism/self-plagiarism.		**2 hours**
3. International standards of integrity for the research work laid down by the Committee for Ethics in Publication. BBU standards on ethics and deontology in the work of research. The concept of the author. The use of the data and the presentation/dissemination of scientific results.		**2 hours**
4. Factors determining and influencing hydrological phenomena and processes		**2 hours**

5. Means of evaluation of the hydrological parameters	student (conversation, demonstration, observation, problem solving, experimentation, modelling) - methods of training based on the action (exercise, algorithm-based, classical and computerized thematic applications)	**2 hours**
6. The need to use synthesis and regionalizations in Hydrology		**2 hours**
7. The bases for the development of synthesis and regionalizations		**6 hours**
4.1. Mathematical statistics		1 hours
4.2. The expression of the water flow		1 hours
4.3. Data on the river basin		1 hours
4.4. Meteorological data		1 hours
4.5. Water management data		2 hours
8. Synthesis and regionalizations of the liquid flow phases		**4 hours**
5.1. Methods used in average liquid flow		2 hours
5.2. Methods used in maximum liquid flow		1 hours
5.3. Methods used in minimum liquid flow		1 hours
9. Synthesis and regionalization of the alluvium flow		**4 hours**

Bibliography

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35. *** UBB (2005) Codul Etic şi Deontologic privind Cercetarea şi Publicaţiile Ştiinţifice al Cercetătorilor şi Cadrelor Didactice din Universitatea Babeş-Bolyai, http://cbs.ot.ubbcluj.ro/files/UBB_Codul%20Etic%20si%20Deontologic.pdf.
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37. *** COPE (2018) Publicatiile Comitetului pentru Etica in Publicatii (COPE) https://publicationethics.org. Accesat: 15 iunie 2018.
38. *** Clarivate Analitics - Web of Science - accesibil din cadrul Facultăţii de Geografie
39. *** Biblioteca Facultăţii de Geografie CIuj-Napoca
40. *** Biblioteca Centralä Universitarã Cluj -Napoca

41. *** Biblioteca personală a cadrelor didactice
42. *** Rețeaua INTERNET: www.inmh.ro; www.wmo.ch; www.meteo.fr; www.wetterzentrale.de; www.metoffice.com ; www.nws.noaa.gov; www.cnrm.meteo.fr; www.ncdc.noaa.gov; www. google.com
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8.2 Seminar / laboratory	Teaching methods	Remarks
1. Methods of expansion of punctual values to spatial values	- methods of interactive training based on the interaction teacher-student (conversation, demonstration, observation, problem solving, experimentation, modelling); - methods of training based on the action (exercise, algorithm-based, classical and computerized thematic applications)	2 hours
2. Synthetic unitary hydrograph		2 hours
3. Flow variability expression		2 hours
4. Correlation graphics		4 hours
5. Flow maps drawing		4 hours
6. Methods use limits		4 hours
7. Maximum rainfall calculation		4 hours
8. Flash-flood parameters regionalisation		2 hours
9. Minimum flow regionalisation		2 hours
10. Liquid flow - alluvial flow relation		2 hours

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9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

- the content of the discipline is consistent with the program of activity of departments of specialized units and specialized institutions; it is recommended to continue studying the hydrological thematic of the next year, as well as the specialized doctorate in the offer of the faculty.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course	Understanding, learning and deepening of the notions of specialty via interactive participation in class.	The continued challenge of the students to the conversation and brainstorming, followed by the awarding of points according to the quality of the answers	30 %

		provided (not more than 0,3 points per session of two hours)	
	The knowledge and ability of operating with the new knowledges	Final exam, includes specialized problems solving	30 %
10.5 Seminar/lab activities	Knowledge of the various specialized statistical calculations and of the mode of the correlations achievement	The involvement of students in making observations and measurements, performing calculations and processing, as well as in the development of thematic classical and computerized applications, followed by the grading of each student. Final colloquium in the last session of practical work	20 % 20 %
	The application of GIS techniques in the spatialization and regionalization of the hydric parameters		
	The capability of undertaking studies on specific issues of activity in the area, including interference with other related domains.		
10.6 Minimum performance standards			
➢ colloquium promotion for the practical work with at least the "satisfactory" grade (6 – six note), which will allow the presentation on the theoretical examination ➢ theoretical exam promotion with 5 (five) note.			

Date	Signature of course coordinator	Signature of seminar coordinator
April 29th, 2020	Gheorghe ȘERBAN, PhD. Associate Professor	Gheorghe ȘERBAN, PhD. Associate Professor

Date of approval

Signature of the head of department

Gheorghe ȘERBAN, PhD. Associate Professor