

COURSE SYLLABUS

1. Data about the program

1.1 Higher education institution	Babeş-Bolyai University
1.2 Faculty	Faculty of Environmental Science and Engineering
1.3 Doctoral school	Doctoral School of Environmental Science
1.4 Field of study	Environmental Science
1.5 Study cycle	Doctorate
1.6 Study program / Qualification	Doctoral training / PhD in Environmental Science

2. Course data

2.1 Name of discipline	Environmental health risk assessment						
2.2 Teacher responsible for lectures	Adjunct Professor Gurzau Eugen						
2.3 Teacher responsible for seminars	Adjunct Professor Gurzau Eugen						
2.4 Year of study	1	2.5 Semester	1	2.6. Type of evaluation	E	2.7 Course framework	Optional

3. Estimated total time of teaching activities (hours per semester)

3.1 Hours per week	3	Out of which: 3.2 Lectures	2	3.3 Seminars / Laboratory classes	1
3.4 Total hours in the curriculum	36	Out of which: 3.5 Lectures	24	3.6 Seminars / Laboratory classes	12
Allocation of study time:					h
Study supported by textbooks, other course materials, recommended bibliography and personal student notes					22
Additional learning activities in the library, on specialized online platforms and in the field					25
Preparation of seminars / laboratory classes, topics, papers, portfolios and essays					26
Tutoring					7
Examinations					8
Other activities: -					
3.7 Individual study (total hours)					88
3.8 Total hours per semester					124
3.9 Number of credits					10

4. Preconditions (where applicable)

4.1 Curriculum	•
4.2 Competences	•

5. Conditions (where applicable)

5.1 Conducting lectures	•
5.2 Conducting seminars / laboratory classes	•

6. Specific competences acquired

Professional competences	<ul style="list-style-type: none"> • Ways to evaluate the intensity, frequency and duration of exposure • Integrating the exposure assessment into the health risk analysis • Ways to control the exposure and diminishing the effects on the human body
Transversal competences	<ul style="list-style-type: none"> • Exposure control of the population groups (from source to receiver) • Health risk assessment • Assessing the health impact in relation with environmental factors

7. Course objectives (based on the acquired competencies grid)

7.1 The general objective of the course	<ul style="list-style-type: none"> • Notions regarding the health status of the population exposed to situations and hazardous substances
7.2 Specific objectives	<ul style="list-style-type: none"> • Exposure assessment of population groups to hazardous situations and substances • Integrated exposure analysis through monitoring programs • Risk assessment by epidemiological and toxicological models • Assessing the health impact in relation with environmental factors • Intervention strategies, exposure control, health protection

8. Content

8.1 Lectures	Teaching methods	Comments
Environment and health, basic principles	Interactive lecture	Student participation
Hazard identification through epidemiological studies	Interactive lecture	Student participation
Human exposure to hazardous situations and substances	Interactive lecture	Student participation
Individual and group exposure	Interactive lecture	Student participation
Susceptibilities in human exposure to hazardous situations and substances	Interactive lecture	Student participation
Assessment of the dose-response relationship	Interactive lecture	Student participation
Toxicology in risk assessment	Interactive lecture	Student participation
Risk assessment regarding the exposure to hazardous situations and substances	Interactive lecture	Student participation
Health impact of the population exposed to hazardous situations and substances	Interactive lecture	Student participation
Bibliography: Specific course developed by Professor Gurzau Eugen and Lecturer Iulia Neamtii, power point materials and specialty literature: Books: <ol style="list-style-type: none"> 1. Gurzău ES, Gurzău AE, Bardac D, Surdu S, Neamțiu I, Pop C, Brezai C, Fodor I, Surdu L, Râmboiu S, Gheorghiu E, Silberg R, Emandi M, Penes M, Pop C, Muică A, Fowler D. Evaluarea riscului comunitar asociat expunerii la plumb și poluanți iritanți în zona Copșa Mică, județul Sibiu(vol. I). Editura Mira Design. Sibiu. 2002. 		

2. Surdu S, Neamțiu I, Gurzău ES, Gurzău AE, Bardac D, Pop C, Brezai C, Fodor I, Peneș M Gheorghiu E, Silberg R, Muică A, Fowler D., Resiga I. Evaluarea riscului comunitar asociat expunerii la plumb și poluanți iritanți în zona Copșa Mică, județul Sibiu (vol. II). Editura Mira Design. Sibiu. 2003.
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4. Neamțiu I., Gurzău E., Popa O., Ruja E., Enășel C., Pop C., Gurzău S., Gurzău A., Fodor I., Marchean D., Chera I., Dumitrescu D., Experimentarea și optimizarea modelului privind distribuția spațială și temporală a pesticidelor și metalelor grele în factorii de mediu din zonele Săliște și Copșa Mică, Sibiu 2010, Editura Universității “Lucian Blaga”, ISBN 978-973-739-712-6
5. Neamțiu I., Gurzău E., Popa O., Pop C., Gurzău A., Fodor I., Bardac D., Resiga I., Evaluarea expunerii la dioxid de sulf, particule respirabile și cadmiu în zona Copșa Mică și Micăsasa, Sibiu 2010, Editura Techno Media, ISBN 978-606-8030-77-7
6. Neamțiu I., Gurzău E., Popa O., Enășel C., Pop C., Gurzău A., Lovasz M., Pinteș A., Fodor I., Bardac D., Resiga I., Dumitrescu D., Selecția populațională și experimentarea în teren a modelului pentru colectarea, depozitarea, transportul, analiza și evaluarea bioindicatorilor specifici în expunerea la pesticide și metale grele, Sibiu 2010, Editura Techno Media, ISBN 978-606-8030-78-4

Articles/ internet site:

1. Aposhian, H.V. 1997. Enzymatic methylation of arsenic species and other new approaches to arsenic toxicity. *Annu. Rev. Pharmacol. Toxicol.* 37:397-419.
2. Aposhian, H. V, E. S. Gurzau, X. C. Le, A. Gurzau, S.M. Healy, X. Lu, M. Ma, L. Yip, R. A. Zakharyan, R. M. Maiorino, R. C. Dart, M. G. Tircus, D.Gonzales-Ramires, D. L. Morgan, D. Avram, M.M. Aposhian. Occurrence of monomethylarsonous acid in urine of humans exposed to inorganic arsenic. *Chem. Res. Toxicol.* 2000, 13, 693-697
3. Aposhian, H.V., R. Zakharyan, Y. Wu, S. Healy, and M.M. Aposhian. 1997. Enzymatic methylation of arsenic compounds: II—An overview. Pp. 296321 in *Arsenic: Exposure and Health Effects*, C.O. Abernathy, R.L. Calderon, and W.R. Chappell, eds. London: Chapman & Hall.
4. Aposhian V., Zakharyan R., Petrick J., Sampayo Adriana, Radabaugh T., Wildfang E., Healy Sheila, Mary Aposhian, Le Chris. 4th International Conference on Arsenic Exposure and Health Effects Abstract pg 43 *Methylarsonous Acid (MMA III)*, the most toxic and neglected biotransformant of inorganic arsenic).
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9. Gurzau ES, et al, Zlatna case study, *Env. Work. Hlth.*, Edit. Joel Tickner, 24-27, 1995
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15. Gurzau ES, et al, Health status of children aged 7 to 11 living in a polluted area (Pb, Cd), *Env.Contam. in CEE*, 465-469, 1992
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8.2 Seminars / laboratory classes	Teaching methods	Comments
Epidemiological study models in health risk and health impact assessment	Case study	Student participation
Ways to assess the human exposure to hazardous situations and substances	Case study	Student participation
Databases and environmental and health data processing	Case study	Student participation
Toxicological models in the relationship between health and environment	Case study	Student participation
Methods for assessing the population health risk and health impact in relation to the environmental factors	Case study	Student participation
Methods of intervention in the human exposure control and the risks associated with it	Case study	Student participation

Bibliography:

Specific course developed by Professor Gurzau Eugen and Lecturer Iulia Neamtii, power point materials and specialty literature:

Books:

1. Gurzău ES, Gurzău AE, Bardac D, Surdu S, Neamțiu I, Pop C, Brezai C, Fodor I, Surdu L, Râmboiu S, Gheorghiu E, Silberg R, Emandi M, Penes M, Pop C, Muică A, Fowler D. Evaluarea riscului comunitar asociat expunerii la plumb și poluanți iritanți în zona Copșa Mică, județul Sibiu (vol. I). Editura Mira Design. Sibiu. 2002.
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3. ATSDR (Agency for Toxic Substances and Disease Registry). 1999. Toxicological profile for cadmium. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service
4. ATSDR. 1992. Case studies in environmental medicine. US Department of Health and Human Services Public Health Service
5. ATSDR. 1993. Exposure to hazardous substances and reproductive health. *American Family Physician* 48(8):1441-1448
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9. Aligning the contents of the discipline with the expectations of the epistemic community representatives, professional associations and standard employers operating in the program field

- The notions and knowledge learned are used both specifically for specialists in the environmental science and engineering and for specialists in the environment field, in terms of transferring information from the source to the community, and learning an integrated approach related to the quality of the environment and the health state of the population.

10. Examination

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Weight in the final grade
10.4 Lectures	Exam	Essay/ Written exam	80%
10.5 Seminars / laboratory classes	Exam	Essay/ Written exam	20%
10.6 Minimum performance standard			
<ul style="list-style-type: none"> • The evaluation is considered to be within the minimum performance standard if it reaches 60% of the individual requirements of the course and the practical work. 			

Date of issue

01.10.2022

Signature of the teacher responsible for lectures



Signature of the teacher responsible for seminars



Date of approval by the doctoral school council

03.10.2022

Signature of the doctoral school director

