## An interdisciplinary summer school on mining of biological data for master and PhD students August 2019, Minsk, Belarus

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Saturday 10.	Sunday 11.	Monday 12.	Tuesday 13.	Wednesday 14.	Thursday 15.	Friday 16.	Saturday 17.
		Course	Course	Course	Course	Course	Mini-workshop
		Introduction					
	tel, dinner and Nesvizh. Lunch will be served	Orange Introduction (Dr. Marko Toplak University of Ljubljana and SMIS Beam-line Synchrotron Soleil)	Invited lecture: Yatskov Mikalai, Luxembourg Institute of Health, Department of Oncology Single Cell transcriptomics	Orange Introduction (Dr. Marko Toplak)	Invited lecture: Dr. Ferenc Borondics, SMIS Beam-line Synchrotron Soleil, Paris, France Big facilities, big data	Invited lecture: Prof. Dr. Tamaz Mdzinarashvili, Faculty of Exact and Natural Sciences, GE- Ivane Javakhishvili Tbilisi State University (GE) Biological thermodynamics	Invited lecture: Dr. Ferenc Borondics, SMIS Beam-line Synchrotron Soleil, Paris, France Challenges in data analysis of infrared spectra from biological and biomedical samples
el, dinner		Module 3: Spectroscopic methods (Olga)	Module 4: Analytical methods used in biology (Olga)	Module 5: Biomedical Imaging (Vassili)	Group work (Experts in a Team)	Group work (Experts in a Team)	Workshop with research presentations by PhD students
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in at the k	stles of M	Module 6: Basic Statistics (Victor)	Module 9: Machine learning (Roman)	Module 8: Clustering (Mikalai)	Group work (Experts in a Team)	Group work (Experts in a Team)	Workshop with research presentations by PhD students
check	the Ca	Tutorial: Basic statistics (Victor)	Tutorial: Machine learning (Roman)	Tutorial: Clustering (Mikalai)			students
nu	. to						
Arrival a	ay: Tour	Module 7: PCA (Achim)	Module 10: Deep learning (Vassili) Room: U227				
	ole da	Tutorial: PCA (Achim)	Tutorial: Deep learning (Vassili)	Tutorial for modules 6-			
	Break			12, further Data			Workshop with research
program \	Module 12: Data pre- treatment (Achim)	Module 11: Data analysis of genetic data (Vasily)	Rooms: U223 and U226	Group work (Experts in a Team)	Group work presentations	presentations by PhD students	
	Social	Tutorial: Data pre- treatment (Achim)	Tutorial: Data analysis of genetic data (Vasily)	Topics for group work will be distributed together with the data			
		Volley ball/soccer and barbecue	Claustrophobia Escape rooms	Alivaria beer museum	Free	Free	Summer School Gala Dinner
	Saturday	Saturday 10. Sunday 11.	Saturday 10.  Course Introduction  Drange Introduction  Orange Introduction  (Dr. Marko Toplak University of Ljubljana and SMIS Beam-line Synchrotron Soleil)  Module 3: Spectroscopic methods (Olga)  Module 6: Basic Statistics (Victor)  Tutorial: Basic statistics (Victor)  Module 7: PCA (Achim)  Tutorial: PCA (Achim)  Tutorial: Data pretreatment (Achim)  Tutorial: Data pretreatment (Achim)  Volley ball/soccer and	Saturday 10.  Course Course Introduction  Course Introduction  Invited lecture: Yatskov Mikalai, Luxembourg Institute of Health, Department of Oncology Single Cell transcriptomics  Module 3: Spectroscopic methods (Olga)  Module 6: Basic Statistics (Victor)  Module 6: Basic Statistics (Victor)  Module 7: PCA (Achim)  Module 10: Deep learning (Roman)  Tutorial: Basic statistics (Victor)  Module 7: PCA (Achim)  Break  Module 10: Deep learning (Vassili) Room: U227  Tutorial: PCA (Achim)  Break  Module 11: Data analysis of genetic data (Vasily)  Volley ball/soccer and  Volley ball/soccer and  Claustrophobia Escape	Saturday 10.  Sunday 11.  Monday 12.  Course	Saturday 10.  Sunday 11.  Monday 12.  Tuesday 13.  Course  Cou	Saturday 10. Sunday 11. Monday 12. Tuesday 13. Wednesday 14. Thursday 15. Friday 16.  Course Course Course Course Course  Course Course  Course Course  Invited lecture: Yatskow Miklal, Lumbourg Institute of Health, Department of Oroclogy Single Cell transcriptomics  Synchrotron Solell, Paris, France Big facilities, big data  Module 3: Spectroscopic methods used in biology (Olga)  Module 6: Basic Statistics (Victor)  Module 6: Basic Statistics (Victor)  Tutorial: Basic statistics (Victor)  Tutorial: Basic statistics (Victor)  Tutorial: PCA (Achim)  Room: U227  Tutorial: PCA (Achim)  Room: U227  Tutorial: Data pretreament (Achim)  Tutorial: Data analysis of genetic data (Vasily) Toylic for group work Wall be distributed together with the data generations  Topics for group work Wall be distributed together with the data generations  Free  Course  Invited lecture: Prof. Dr. Tamaz Mdzinarabivili, of Health, Department of Oroclogy SMS Beam-line Synchrotron Solell, Paris, France Big facilities, big data  Natural Sciences, Cet- Satistics (Victor)  Rooman (Experts in a Team)  Module 3: Spectroscopic methods used in biology (Olga)  Module 6: Basic Statistics (Victor)  Tutorial: Basic statistics (Victor)  Tutorial: PCA (Achim)  Room: U227  Tutorial: PCA (Achim)  Room: U227  Tutorial: Data pre- treatment (Achim)  Tutorial: Data analysis of genetic data (Vasily)  Tutorial: Data

All lecture rooms are in the faculty of International Relations.