Planetary geosciences: exploration and methods

- ***COURSE SYLLABUS***

1.	**Course title:**	
	Planetary geosciences: exploration and methods	
2.	**Lecturer:**	
	Main lecturer: Dr hab. Daniel Mège *Co-lecturers: Dr hab. Joanna Gurgurewicz, Prof. dr hab. Włodzimierz Kofman, Dr Sam Poppe, Dr Pierre-Antoine Tesson*	
3.	**Field, type and level of studies, year of study:**	
	Planetary geosciences, Remote Sensing, all levels of studies, all years of study	
4.	**Course character:**	
	Monographic lecture	
5.	**Teaching method:**	
	Online	
6.	**Language:**	*English*
7.	**Course type and number of hours:**	
	Lecture, 20h	
8.	**Estimated load of student's independent work:**	*10h*
9.	**Total workload and number of ECTS points:**	*30 h, 3 ECTS*
10.	**Short description and main focus of the course:**	
	The following topics will be described and discussed during lectures: • *Introduction to planetary geosciences. Overview.* • *Methods in planetary geosciences* • *Moon exploration* • *Mars exploration* • *Mercury exploration* • *Selected case studies* *This course will include a student project. For instance, the project may consist of preparing a map of an area on a rocky planetary body along with an interpretation of the geological processes.*	
11.	**References:**	
	Helbert, J., D'Amore, M., Aye, M., & Kerner, H. (Eds.). (2022). Machine learning for planetary science. Elsevier.	

	Soare, R., Conway, S., Williams, J. P., & Oehler, D. (Eds.). (2021). Mars Geological Enigmas: From the Late Noachian Epoch to the Present Day. Elsevier. *Solomon, S. C., Nittler, L. R., & Anderson, B. J. (Eds.). (2018). Mercury: The view after MESSENGER (Vol. 21). Cambridge University Press.*	
12.	**Prerequisites:** *Knowledge of geology and remote sensing at a basic level.*	
13.	**Educational outcomes:**	**PQF level 8 codes:**
	Knowledge: *this course gives an overview of planetary geosciences with focus on two aspects: (i) methodologies used in planetary exploration, in particular in geological investigations and (ii) application of these methods for studying geological processes in our Solar System*	*P8S_WG, P8S_WK*
	Practical Skills: *Students will acquire methods to observe and interpret geological features: tectonics, volcanism, hydrology. Students will learn how to move from producing a map to interpretation of planetary processes.*	*P8S_UW, P8S_UK, P8S_UO*
	Social Skills: *Students will be ready to conduct independent research which would contribute to existing scientific knowledge; Students will be ready to develop geological maps and justify scientific aims in planetary exploration mission conceptualization.*	*P8U_K*
14.	**Evaluation of the educational outcomes:** *Presentation of mapping projects. Selection of projects will be provided during the first month of lectures.*	
15.	**Criteria to complete the course:** *Attendance (40%) plus presentation of selected project (60%)*	
16.	**Contact with the lecturer:** *Main lecturer: dmege@cbk.waw.pl* *Co-lecturers: sampoppe@cbk.waw.pl, patesson@cbk.waw.pl*	