



IUSS

Scuola Universitaria Superiore Pavia

UME School, a.y. 2016-2017

Course: Flood Risk

Lecturer: Dr. Mario Martina

Date: 18-20/07/2017

Classroom: 1-17@IUSS

Course schedule

Week	Date	Lecture hours		Subject	Tot h
1	18/07/2017	11:00-13:00		An introduction to hydrology and flood risk The main processes of the hydrological cycle	2
	19/07/2017	10:00-13:00	15:00 – 17:00	Modelling approaches to compute the discharge in a river Definition of flood	5
	20/07/2017	10:00-13:00		The Intense-Duration-Frequency curve The Flood Frequency Curve Anatomy of a Flood Risk Model The flood risk analysis.	3

Course Description

The course will give an overview of the models, approaches, problems related with the flood risk assessment. In the first part it will be provided an introduction to the main concepts of the hydrological cycle and the physical mechanism of a flood. In the second part it will be describe a flood risk model in terms of its main component hazard, vulnerability and exposure.

During the course there will be presentation on specific applications on the estimation of the defence failure effects, the downscaling of the exposure model, the computation of building damages due to flood and simple tools for the estimation of the extreme events distribution.

References

- Haan, Charles Thomas. *Statistical methods in hydrology*. The Iowa State University Press, 2002.
- Singh, Vijay P., and V. P. Singh. *Elementary hydrology*. Englewood Cliffs: Prentice Hall, 1992.
- Dingman, S. Lawrence. *Physical hydrology*. Waveland press, 2015.
- Beven, Keith, and Jim Hall, eds. *Applied uncertainty analysis for flood risk management*. World Scientific, 2014.
- Kundzewicz, Zbigniew W., et al. "Flood risk and climate change: global and regional perspectives." *Hydrological Sciences Journal* 59.1 (2014): 1-28.
- Kundzewicz, Zbigniew W., ed. *Changes in flood risk in Europe*. CRC Press, 2012.