



WINTER SCHOOL AT INSTITUTO SUPERIOR TÉCNICO, LISBON UNIVERSITY (IST/UL) - AGENDA

WATER RESOURCES MODELING: PART 1 (31/Jan to 4/Feb) – FLOOD AND DROUGHT ANALYSIS. PART 2 (7/Feb to 11/Feb) – RESERVOIR OPERATION

FROM 10 am TO 1 pm (CET)

WATER RESOURCES MODELING: PART 1: FLOOD ANALYSIS				
Monday – 31/Jan 2022 Topic – Flood analysis	Tuesday – 1/Feb 2022 Topic – Flood analysis	Wednesday – 2/Feb 2022 Topic – Drought analysis	Thursday – 3/Feb 2022 Topic – Hydrological extremes	Friday – 4/Feb 2022 Topic – Synthesis and discussion
Lectures: <ul style="list-style-type: none"> • Basic concepts of flood analysis • Floods and risk analysis • Peak flood discharges and flood hydrographs models • Relevant factors • Models <ul style="list-style-type: none"> - Statistical models - Empirical formula 	Lectures: <ul style="list-style-type: none"> • Components of the flood hydrographs • Rainfall losses • Models (cont.) <ul style="list-style-type: none"> - Unit hydrograph model • Brief presentation of the HEC-HMS Program 	Lectures: <ul style="list-style-type: none"> • General concepts • Types of droughts • SPI-based approach • Some previous results 	Lectures: <ul style="list-style-type: none"> • Changes in hydrological extremes 	<ul style="list-style-type: none"> • HEC-HMS program • Application exercises
Students work	Students work	Students work	Students work	



WINTER SCHOOL AT INSTITUTO SUPERIOR TCNICO, LISBON UNIVERSITY (IST/UL) - AGENDA

WATER RESOURCES MODELING: PART 1 (31/Jan to 4/Feb) – FLOOD AND DROUGHT ANALYSIS. PART 2 (7/Feb to 11/Feb) – RESERVOIR OPERATION

FROM 10 am TO 1 pm (CET)

WATER RESOURCES MODELING: PART 2: RESERVOIR OPERATION				
Monday Topic – Introduction to water management	Tuesday Topic – Simulation of reservoirs operation	Wednesday Topic – Optimization of reservoir operation	Thursday Topic – Optimization of reservoir operation	Friday Topic – Groundwater management
Lectures: <ul style="list-style-type: none"> • The importance of water for human development. • Fundamentals of water management and the challenges of integrated watershed and water resources management. • Water and civilization. • Consumptive and non-consumptive water uses. • Types of dams and reservoirs and its main structures. 	Lectures: <ul style="list-style-type: none"> • Flow duration curves and empirical distribution curves • Reservoir sizing • Reservoir simulation • Performance indicators for reservoir operation • Reservoir operation rules. • Risk management and the concept of hedging. • Reservoir operation simulation models and integrated water management models. 	Lectures: <ul style="list-style-type: none"> • Simulation vs optimization models. • Linear programming for water management. 	Lectures: <ul style="list-style-type: none"> • Dynamic programming for water management. 	Lectures: <ul style="list-style-type: none"> • Basic concepts of groundwater resources. • Types of aquifers and aquitards. • Aquifer characterization. • Recharge estimation. • Surface water / groundwater interaction. • Groundwater models.
Students work	Students work	Students work	Students work	

