UNWiS 2026

Winter School on **Underwater Network Simulations**

Padova (Italy) | 2 – 6 February 2026
Department of Information Engineering (DEI)
University of Padova

Programme

		BASIC	ADVANCED
Mon 2	09:00 - 09:30	Registration and welcome	
	09:30 - 10:30	Network simulation, emulation and sea trials: introduction, statistics and the DESERT Framework	
	10:45 - 12:30	IEEE OES Workshop 1: Underwater networks and protocols. In the house of JANUS and the SALSA protocol stack (K. Blom, D. Sotnik, F. Campagnaro)	
	14:00 - 15:30	Basics of GNU/Linux, Bash and DESERT install and setup	Random numbers generation and timers
	15:45 - 17:00	First examples of simulation in DESERT	Positions and mobility models: an overview and exercises
Tue 3	09:00 - 10:30	The Urick-Thorp underwater acoustic propagation model	
	10:45 - 11:45	IEEE OES Workshop 2: Multimodal Underwater Networks: - Channel models and RL multimodal communications (F. Bragato & F. Donegà)	
	11:45 - 12:30	- The underwater electromagnetic channel model (R. Tumiati) (Workshop 2 part 2)	
	14:00 - 15:30	The underwater optical channel model	Cross-layer messages for inter-module communication
	15:45 - 17:00	Multimodal communications in DESERT	Example of building a cross-layer message
Wed 4	09:00 - 10:30	IEEE OES Workshop 3: Modulation and coding schemes for underwater acoustic communication and channel replay (E. Wengle & J. Lazzarin)	
	10:45 - 11:15	- WOSS introduction and overview: the World Ocean Simulation System (V. Cimino) (Workshop 3 part 2)	
	11.15 - 12:30	WOSS mobility and exercises	
	14:00 - 15:30	Developing a DESERT module, addon and header	Review on DESERT addons and headers
	15:45 - 17:00	Exercises on setting up a simple DESERT module	Exercise on setting up a complete DESERT addon
Thu 5	09:00 - 10:30	IEEE OES Workshop 4: Underwater routing protocols: Flooding, DFlood and GUWMANET overview (S. Porretta & D. Sotnik)	
	10:45 - 11:15	Input/output methods for DESERT simulations (R. Francescon)	
	11:15 - 12:30	Emulation with DESERT: Real-time scheduler and packers	
	14:00 - 15:30	A low-cost software-defined acoustic modem for research: SuM (D. Spinosa)	
	15:45 - 17:00	Connecting DESERT to real devices (Evologics, SuM, simple chat and file transfer)	
Fri 6	09:00 - 09:30	IEEE OES Workshop 5: ROS talks underwater: - Integrating DESERT and ROS underwater: a mobility model (D. Costa)	
	09:30 - 10:30	- ROS Underwater use cases (N. Ferraresso & D. Cosimo) (Workshop 5 part 2)	
	10:45 - 12:30	Exercises with ROS and DESERT	
	14:00 - 15:30	Gazebo integration in DESERT	
	15:45 - 17:00	Exercises with Gazebo and DESERT	