



## *Preliminary schedule*

*for the International Course and Field seminar*

### ***Characterization and Engineering of Karst Aquifers***

to be held in Trebinje, Bosnia & Herzegovina, 3-10 June, 2014  
with partnership of the DIKTAS Project

<b>Day</b>	<b>Time (h)</b>	<b>Topic / Activity</b>	<b>Lecturer</b>
<b>3 June</b>	<b>10 AM -</b>	Arrival, Registration	
	<b>7 PM -</b>	Welcoming reception	
<b>4 June</b>	<b>9 – 9.30 AM</b>	Opening ceremony	
	<b>9.30 – 11 AM</b>	Introductory note about course; Historical development of karstology and karst hydrogeology; Importance of karst and karst distribution worldwide; Geo-heritage sites; Dinaric karst	Z.Stevanović
	<b>11.15 AM – 12.45</b>	Carbonate and non-carbonate rocks: mineralogy, depositional environments, classifications	D.Milovanović
	<b>2 – 2.45 PM</b>	Chemical factors of karstification; Role of tectonics	D.Milovanović
	<b>2.45 – 3.45 PM</b>	Porosity and permeability of karstic rocks; Karstification process and its features: Surface and subsurface karst landforms	Z.Stevanović
	<b>4-5.30 PM</b>	Groundwater circulation in karst: recharge, flow types and directions, discharge	Z.Stevanović
<b>5 June</b>	<b>9 – 10.15 AM</b>	Methods in karst hydrogeology – an overview; Geology, field reconnaissance and mapping, , water occurrences inventory, remote sensing, geophysics, tracing tests	Z.Stevanović
	<b>10.15 – 11.30 AM</b>	Methods in karst hydrogeology – climate, hydrology, water chemistry, statistics	V. Ristić Vakanjac
	<b>11.45 AM – 12.45</b>	Methods in karst hydrogeology – geomorphology, speleology, exploratory drilling	S. Milanović
	<b>2- 3.30 PM</b>	Methods in karst hydrogeology – hydrogeology maps, GIS	S. Milanović
	<b>3.45 – 5 PM</b>	Hydrogeologic properties and hydrodynamics of karst aquifers, field tests	Z.Stevanović
	<b>5.15-6.30 PM</b>	Characterization of karst aquifers; Groundwater budget and catchment delineation; Specific regime of karstic groundwater (quantity, quality)	Z.Stevanović

<b>6 June</b>	<b>9- 10.15 AM</b>	Water extraction in karst; Safe yield and sustainability; Aquifer control in discharge zones and drainage areas	Z.Stevanović
	<b>10.15 – 11.45 AM</b>	Problems related to construction of dams, reservoirs and other structures and buildings in karst; Investigation, design, corrective measures, case studies.	P. Milanović
	<b>12-12.45 PM</b>	Leakage from reservoirs and remedial measures, case studies	S. Milanović
	<b>2-3 PM</b>	Presentation on the HE system Trebišnjica; DVD movie “Trebišnjica” waters	P. Milanović
	<b>3-6.30 PM</b>	Half-day field trip to Grančarevo and Gorica dams, and intake for water supply of Trebinje (“Oko” spring)	guided by P. Milanović and other lecturers
<b>7 June</b>	<b>8.30 AM – 6.30 PM</b>	One-day field trip and seminar (classical karst features, phenomena, engineering structures): Popovo polje – Vjetrenica cave – Vrelo Bune (the largest karst spring in Dinaric karst) – spring Vrelo Bregave – Dabarsko polje (water engineering structures) – Fatničko polje (estavelle Obod) – Bilečko Lake (submerged source of Trebišnjica River) – Trebinje	guided by P. Milanović and other lecturers
<b>8 June</b>	<b>9.30 – 11 AM</b>	Tapping karst aquifers: water wells, galleries, engineering structures, and sustainability;, case studies	N. Krešić
	<b>11.15-12.00 AM</b>	Karst aquifer restoration (groundwater remediation)	N. Krešić
	<b>12-12.45 PM</b>	Protecting the nature: Endemic species; Groundwater monitoring in karst	S. Milanović
	<b>2- 2.45 PM</b>	Modeling of karst aquifers – Physical setting, GIS application	S. Milanović
	<b>2.45 – 3.45 PM</b>	Modeling of karst aquifer – Springs hydrograph analysis and stochastic models	V. Ristić Vakanjac
	<b>4 – 5.30 PM</b>	Modeling of karst aquifers – conceptualization for numeric models, software, EPM, CFP, case studies	N. Krešić
<b>9 June</b>	<b>9 – 10.45</b>	Hydraulic mechanism and behavior of karst aquifers, case studies	F. Fiorillo

	<b>11 – 13.00 AM</b>	Water resources cycle in karst; Feasibility studies and engineering design; Environmental impact assessment; Case studies	O. Bonacci
	<b>2.30-4.30 PM</b>	Karst aquifer vulnerability: assessment methods, visualization, sanitary protection zones, case studies	B. Andreo
	<b>4.45-5.30</b>	Transboundary aquifers in karst: problems, solutions and experiences	N.Kukurić
	<b>5.30 – 5.45 PM</b>	Concluding remarks	Z.Stevanović
<b>10 June</b>	<b>9.30 – 12.30 AM</b>	Exam: Written test and verbal discussion	Z.Stevanović, V. Ristić Vakanjac, S. Milanović
	<b>3-4.30 PM</b>	Results of the exam, presentation of Certificates, Closing ceremony	
	<b>6.30 -</b>	Farewell party: Local winery; Dinner in national restaurant	