

#### 4. Summary Table of Basic Conditions of Undergraduate Teaching Professional Laboratories

Summary Table of Basic Conditions of Undergraduate Teaching Laboratory

Serial number	Course	Description	This major offers experimental projects	Experiment type/category	Main experimental equipment	Number of sets	Experimental site Area	Number of groups that can be opened	Number of people per group
1		Determination of alkalinity (acid-base titration method)	Analysis of the weighing practice of the analytical balance	Comprehensive	Electronic balance	13	Water Analysis Chemistry Laboratory	12	2-3people
			Basic operations of titration analysis		titration stand	30	160.13m <sup>2</sup>		
			Determination of Alkalinity in Water(Acid-Base Indicator Titration Method)						
2		Hardness determination (complexometric titration method)	Determination of Water Hardness(Complexometric Titration Method)	Comprehensive	Electronic balance	13	Water Analysis Chemistry Laboratory	12	2-3people
					titration stand	30	160.13m <sup>2</sup>		
3	Water Analytical Chemistry	COD Determination (Redox Titration Method)	Determination of COD in Water(Permanganate Index Method)	Comprehensive	Electronic balance	13	Water Analysis Chemistry Laboratory	12	2-3people
					titration stand	30	160.13m <sup>2</sup>		
4		Dissolved oxygen determination (redox titration method)	Determination of Dissolved Oxygen in Water(Iodometric Method)	Comprehensive	Electronic balance	13	Water Analysis Chemistry Laboratory	12	2-3people
					titration stand	30	160.13m <sup>2</sup>		
5		Determination of iron content (absorption spectrometry)	Determination of divalent iron and total iron in water(Absorption Spectroscopy)	Comprehensive	Electronic balance	13	Water Analysis Chemistry Laboratory	12	2-3people
					Visible spectrophotometer	11	160.13m <sup>2</sup>		
6		Determination of Cl <sup>-</sup> ions in water	Determination experiment of Cl <sup>-</sup> ions in water	Comprehensive	Electronic balance	13	Water Analysis Chemistry Laboratory	12	2-3people
						160.13m <sup>2</sup>			
1	Water Microbiology Experiment	Observation of the morphology and special structures of microorganisms	Operation of optical microscopes and observation of microbial morphology	Verification	microscope	19	Water Microbiology Laboratory	10	4people
		80.44 m <sup>2</sup>							
2		Staining techniques for microorganisms and observation of activated sludge	Gram staining of bacteria and the use of oil immersion microscopy	Comprehensive	microscope	19	Water Microbiology Laboratory	10	4people
						80.44 m <sup>2</sup>			

3		Medium preparation, yeast counting	Preparation and sterilization of culture media	Comprehensive	microscope	19	Water Microbiology Laboratory	10	4people
			Counting and measuring yeast cells		High-temperature sterilizer	4			
4		Separation of bacteria and viable cell counting in activated sludge	Dilution, separation, and inoculation of microorganisms in the soil	Comprehensive	microscope	19	Water Microbiology Laboratory	10	4people
					Biochemical incubator	3			
					Large-capacity constant temperature shaker	1			
5		Determination of total bacterial count in drinking water	Determination and counting of total bacteria in water bodies	Comprehensive	microscope	19	Water Microbiology Laboratory	10	4people
					Biochemical incubator	3			
					Ultra-clean workbench	2			
6		Coliform bacteria physiological and biochemical tests, determination of coliform bacteria in drinking water	Determination and counting of coliform bacteria in water bodies	Comprehensive	microscope	19	Water Microbiology Laboratory	10	4people
					Biochemical incubator	3			
					Ultra-clean workbench	2			
1	Hydraulics experiment	Point pressure measurement and verification of pressure pipe head	Comprehensive Experiment of Fluid Statics	Verification	Hydrostatic Pressure Transmission Demonstration Instrument	3	Fluid Mechanics Laboratory	3	4people
2		Point flow rate and flow rate distribution measurement	Bit management speed measurement and correction factor calibration experiment	Comprehensive	Self-circulating pitot tube speed measurement instrument	3	Fluid Mechanics Laboratory	6	4people
					Comprehensive Fluid Mechanics Experimental Platform	3			
3		Calibration of the flow coefficient of a Venturi flowmeter	Venturi comprehensive experiment	Comprehensive	Self-circulating Venturi experiment device	3	Fluid Mechanics Laboratory	6	4people
					Comprehensive Fluid Mechanics Experimental Platform	3			
4		Verification experiment of Bernoulli's equation	Comprehensive experiment on the constant total flow Bernoulli equation	Comprehensive	Bernoulli equation experimental device	3	Fluid Mechanics Laboratory	6	4people
					Comprehensive Fluid Mechanics Experimental Platform	3			
5		Flow state analysis	Renault experiment	Verification	Self-circulating Reynolds meter	3	Fluid Mechanics Laboratory	6	4people
					Comprehensive Fluid Mechanics Experimental Platform	3	169.87 m <sup>2</sup>		

6	Resistance coefficient measurement	Local head loss experiment	Verification	Local resistance coefficient measurement experimental device	3	Fluid Mechanics Laboratory	6	4people
				Comprehensive Fluid Mechanics Experimental Platform	3			
				Resistance coefficient measuring instrument	3			
7	Flow analysis of pressurized pipe flow	Head loss experiment along the route	Verification	Comprehensive Fluid Mechanics Experimental Platform	3	Fluid Mechanics Laboratory	6	4people
8	Law of Momentum	Momentum Law Experiment	Verification	Momentum Law Experiment Platform	4	Fluid Mechanics Laboratory	3	4people
1	Pump and Pump Station Experiment	Determination of flow rate, head, shaft power, and rotational speed of centrifugal pumps; operating methods for centrifugal pumps	Comprehensive	Centrifugal pump performance comprehensive testing device	6	Pump and Pump Station Laboratory	6	4people
1	Water Quality Engineering Experiment	Concrete experiment	ConcretePrecipitationExperiment	Six-way mixing experiment stirrer	6	Water Quality Engineering Laboratory	6	4people
				Scattering light turbidity meter	6			
				pHmeter	6			
2	Granular free sedimentation experiment	Free sedimentation experiment	Comprehensive	Free sedimentation device (6 units)	4	Water Quality Engineering Laboratory	8	4people
				Scattering light turbidity meter	6			
3	Filtration and backwashing experiment	Filtration and Backwashing Experiment	Comprehensive	Filtration and backwashing experimental device	8	Water Quality Engineering Laboratory	8	4people
				Scattering light turbidity meter	6			
				Ultraviolet-VisibleSpectrophotometer	6			
4	Activated carbon adsorption experiment	Activated carbon adsorption experiment	Design	Digital display constant temperature oscillating water bath	3	Water Quality Engineering Laboratory	6	4people
				Water bath constant temperature oscillator	3			
5	Determination experiment of total exchange capacity	Determination experiment of total resin exchange	Comprehensive	titration stand	30	Water Quality	12	4people

	and working exchange capacity of resin	capacity and working exchange capacity				Engineering Laboratory		
						251.57m <sup>2</sup>		
					Constant temperature drying oven	7		
6	Sludge Index (SVI) and the determination and analysis experiment of sludge specific resistance	Sludge Index (SVI) and the determination and analysis experiment of sludge specific resistance	Compre hensive	Muffle furnace	1	Water Quality Engineering Laboratory	12	4people
				Electronic balance	13	251.57m <sup>2</sup>		
				Water circulation vacuum pump	6			
7	Oxygenation experiment in the aeration system	Aeration and oxygenation experiment	Compre hensive	Aeration and Oxygenation ExperimentDevice (turntable, blower)	7	Water Quality Engineering Laboratory	7	4people
				Portable dissolved oxygen meter	7	251.57m <sup>2</sup>		
8	Operation and control experiment of pressurized dissolved air flotation	Experiment on the operation and control of pressurized gas flotation	Compre hensive	Air flotation experimental device (Group 6) Laminar flow air flotation experimental device	1 2	Water Quality Engineering Laboratory	6	4people
9	Comprehensive Water Treatment Experiment	Comprehensive Water Treatment Experiment	Design	All experimental instruments	-	Water Supply and Drainage Engineering Laboratory	-	4people
						1289m <sup>2</sup>		
1	Constru ction Water Supply and Drainag e Engine eringIn spectio n	Demonstration of fire hydrants and automatic sprinkler fire extinguishing systems	Demonst ration	Comprehensive Experimental Demonstration Platform for Building Water Supply and Drainage	1	Building Water Supply and Drainage Engineering Laboratory	1	20people
						82.51m <sup>2</sup>		

Design-oriented and comprehensive experiments are conducted in batches of half a class or a whole class, with no more than 4 people in each group.