Course title	Water analysis	s and treatment
Course code	CH 5105	
Course type	Elective course	
Academic year	2017/ 2016	
Coordinator	Prof. Ali H. Gemeay	
Other Staff		
Semester	First semester	
Level	Bio-analytical Diploma	
Pre-Requests		
Course Delivery	Lecture	1 4 x 2 Lectures
	Practical	Non
	Credit	2 h
Parent Department	Chemistry Department	

## **Course contents**

Lecture No	Description		
Lecture 1	Water quality and pollution, basic definitions and terms, legislation overview, harmful substances (pollutants),toxic substances		
Lecture 2	Pollution sources, waste water, waste water management.		
Lecture 3	History of Water Pollution; Toxic Metals and Other Inorganic Pollutants; Organic Pollutants		
Lecture 4	Wastewater Characteristics; Wastewater Collection Facilities;		
Lecture 5	Wastewater Pretreatment; Primary, Secondary and Tertiary Treatment Technologies		
Lecture 6	Surface water quality, monitoring, natural purification processes, oxygen balance, sediments.		
Lecture 7	Discharging of waste water, immersion and emission strategies, legislation		
Lecture 8	Midterm Examination		
Lecture 9	Protection of ground water, water quality monitoring, Rainfall water, pollution of rainfall water, transport processes		
Lecture 10	Water quality accidents, common procedures, practice, removal and prevention (both ground and surface water)		
Lecture 11	Chemical-physical wastewater-waste gas treatment Adsorption from wastewaters and waste-gases. Fundamentals, isotherms, kinetics, chemical oxidation.		
Lecture 12	Fundamentals, isotherms, kinetics, chemical oxidation.		
Lecture 13	Kinetics and process design; - chemical precipitation for metals and phosphorus removal. Effect of pH on precipitation, pH calculation; - membrane processes (ultrafiltration, nanofiltration, reverse osmosis)		
Lecture 14	Strategies for water pollution control		