

Post – graduate Curriculum  
 Civil Engineering Department  
 College of Engineering  
 University of Babylon.

PH.D. Courses: Structural Engineering

First Semester	Code	Subject	units	Bloom's Taxonomy
	EN.CV.PHD.ASDAD1	Advanced Seismic and Dynamic Analysis and Design	3	understanding, applying and analyzing
	EN.CV.PHD.AMNM1	Advanced Mathematical and Numerical Methods	3	understanding, applying and analyzing
	EN.CV.PHD.APC1	Advanced Pre-Stressed Concrete II	3	understanding, applying and analyzing
	EN.CV.PHD.APS1	Advanced Plates and Shells II	3	understanding, applying and analyzing
	EN.CV.PHD.ST1	Selected Topics	3	understanding, applying and analyzing
	EN.CV.PHD.STEL1	Technical English Language	1	understanding, applying
	Total			16

Second Semester	Code	Subject	units	Bloom's Taxonomy
	EN.CV.PHD.PT2	Plasticity Theory	3	understanding, applying and analyzing
	EN.CV.PHD.ES2	Elastic Stability	3	understanding, applying and analyzing
	EN.CV.PHD.ASSD2	Advanced Steel Structures Design	3	understanding, applying and analyzing
	EN.CV.PHD.ARC2	Advanced Reinforced Concrete II	3	understanding, applying and analyzing
	EN.CV.PHD.SCA2	Special Concrete and Additives	3	understanding, applying and analyzing
	EN.CV.PHD.STEL2	Technical English Language	1	understanding, applying
	Total			16

**Units of 1st and 2nd Term = 32**

**Units (dissertation) = 28**

**Total Unit = 60**

M. Sc. Courses: Structural Engineering

First Semester	Code	Subject	units	Bloom's Taxonomy
	EN.CV.MSC.ASA1	Advanced Structural Analysis	3	understanding, applying and analyzing
	EN.CV.MSC.ANA1	Advanced Numerical Analysis	2	understanding, applying and analyzing
	EN.CV.MSC.ASA1	Advanced Mechanics of Solid	3	understanding, applying and analyzing
	EN.CV.MSC.PC1	Prestressed Concrete	2	understanding, applying and analyzing
	EN.CV.MSC.DA1	Dynamic Analysis	3	understanding, applying and analyzing
	EN.CV.MSC.TEL1	Technical English Language	1	understanding, applying
	Total			14
Second Semester	Code	Subject	units	Bloom's Taxonomy
	EN.CV.MSC.ACT2	Advanced Concrete Technology	2	understanding, applying and analyzing
	EN.CV.MSC.FE2	Finite Elements	3	understanding, applying and analyzing
	EN.CV.MSC.ARC2	Advanced Reinforced Concrete	3	understanding, applying and analyzing
	EN.CV.MSC.TPS2	Theory of Plates and	3	understanding, applying

		Shells		and analyzing
	EN.CV.MSC.TEL2	Technical English Language	1	understanding, applying
	Total		12	

**Units of 1st and 2nd Term = 26**

**Units of 3rd and 4th Term (Thesis) = 10**

**Total = 36 Unit**

M. Sc. Courses: Water Resources Engineering

		Code	Subject	units	Bloom's Taxonomy
First Semester		EN.CV.MSC.WANA1	Advanced Numerical Analysis	2	understanding, applying and analyzing
		EN.CV.MSC.ST1	Sediment Transport	2	understanding, applying and analyzing
		EN.CV.MSC.DAS1	Dimensional Analysis and similitude	2	understanding, applying and analyzing
		EN.CV.MSC.HS1	Hydraulic Structures	3	understanding, applying and analyzing
		EN.CV.MSC.G1	Groundwater	2	understanding, applying and analyzing
		EN.CV.MSC.WTEL1	Technical English Language	1	understanding, applying
		Total		12	-
	Second Semester		Code	Subject	units
		EN.CV.MSC.O2	Optimization	3	understanding, applying and analyzing
		EN.CV.MSC.SSS2	Structures of Soil	2	understanding, applying and analyzing

		Supporting		
	EN.CV.MSC.AES2	Advanced Engineering Statistics	2	understanding, applying and analyzing
	EN.CV.MSC.HOC2	Hydraulic of Open Channels	3	understanding, applying and analyzing
	EN.CV.MSC.AH2	Advanced Hydrology	3	understanding, applying and analyzing
	EN.CV.MSC.WTEL2	Technical English Language	1	understanding, applying
	Total			14

**Units of 1st and 2nd Term = 26**

**Units of 3rd and 4th Term (Thesis) = 10**

**Total = 36 Unit**

M. Sc. Courses: Construction Materials Engineering

First Semester	Code	Subject	units	Bloom's Taxonomy	
	EN.CV.MSC.ACT1	Advanced Concrete Technology I	3	understanding, applying and analyzing	
	EN.CV.MSC.CMFC1	Composite Materials and Ferro cement	2	understanding, applying and analyzing	
	EN.CV.MSC.CM1	Ceramic Materials	2	understanding, applying and analyzing	
	EN.CV.MSC.TCM1	Testing of Concrete Materials	3	understanding, applying and analyzing	
	EN.CV.MSC.MANA1	Advanced Numerical Analysis	2	understanding, applying and analyzing	
	EN.CV.MSC.MTEL1	Technical English Language	1	understanding, applying	
	Total			13	-
	Second Semester	Code	Subject	units	Bloom's Taxonomy
	EN.CV.MSC.ACT2	Advanced Concrete	3	understanding, applying and analyzing	

		TechnologyII		
	EN.CV.MSC.ST2	Selective Topics	2	understanding, applying and analyzing
	EN.CV.MSC.AES2	Advanced Engineering Statistics	2	understanding, applying and analyzing
	EN.CV.MSC.CD2	Concrete Durability	3	understanding, applying and analyzing
	EN.CV.MSC.SC2	Special Concrete	2	understanding, applying and analyzing
	EN.CV.MSC.MTEL2	Technical English Language	1	understanding, applying
	Total		13	-

**Units of 1st and 2nd Term = 26**

**Units of 3rd and 4th Term (Thesis) = 10**

**Total = 36 Unit**



M. Sc. Courses: Transportation Engineering

First Semester	Code	Subject	units	Bloom's Taxonomy	
	EN.CV.MSC.ATE1	Advanced Traffic Engineering	3	understanding, applying and analyzing	
	EN.CV.MSC.APD1	Advanced Pavement Design	3	understanding, applying and analyzing	
	EN.CV.MSC.RE1	Railways Engineering	2	understanding, applying and analyzing	
	EN.CV.MSC.DAP1	Design of Airport Pavement	2	understanding, applying and analyzing	
	EN.CV.MSC.TANA1	Advanced Numerical Analysis	2	understanding, applying and analyzing	
	EN.CV.MSC.TTEL1	Technical English Language	1	understanding, applying	
	Total			13	-
	Code	Subject	units	Bloom's Taxonomy	
Second Semester	EN.CV.MSC.AGD2	Advanced Geometric Design	3	understanding, applying and analyzing	
	EN.CV.MSC.HMT2	Highway Materials Technology	3	understanding, applying and analyzing	

	EN.CV.MSC.BD2	Bridges Design	3	understanding, applying and analyzing
	EN.CV.MSC.PER2	Planning and Economies of Roads	3	understanding, applying and analyzing
	EN.CV.MSC.TTEL2	Technical English Language	1	understanding, applying
	Total		13	-

**Units of 1st and 2nd Term = 26**

**Units of 3rd and 4th Term (Thesis) = 10**

**Total = 36 Unit**

## H.D. Courses: Structural Engineering

First Semester (General)				
	Code	Subject	units	Bloom's Taxonomy
	EN.CV.HD.ACT1	Advanced Concrete Technology	2	understanding, applying and analyzing
	EN.CV.HD.CSD1	Computer Structural Design	2	understanding, applying and analyzing
	EN.CV.HD.HS1	Hydraulic Structures I	2	understanding, applying and analyzing
	EN.CV.HD.ASE1	Advanced Sanitary Engineering	2	understanding, applying and analyzing
	EN.CV.HD.GE1	Geotechnical Engineering	2	understanding, applying and analyzing
	EN.CV.HD.RE1	Roadways Engineering	2	understanding, applying and analyzing
	Total		12	
Second Semester (Dept.)				
	Code	Subject	units	Bloom's Taxonomy
	EN.CV.HD.BSD2	Bridges Structural design	2	understanding, applying and analyzing
	EN.CV.HD.PSCP2	Prestressed Concrete Principles	2	understanding, applying and analyzing

	EN.CV.HD.SCSD2	Special Concrete Structure Design	2	understanding, applying and analyzing
	EN.CV.HD.STCT2	Selected Topics in Concrete Technology	2	understanding, applying and analyzing
	EN.CV.HD.NASE2	Numerical Applications in Structural Engineering	2	understanding, applying and analyzing
	EN.CV.HD.SAUMP2	Structural Analysis using Mathematical Procedures	2	understanding, applying and analyzing
	Total		12	

**Units of 1st and 2nd Term = 24**

**Units of 3rd Term (Thesis) = 4**

**Total Unit = 28**

## H.D. Courses: Sanitary Engineering

First Semester (General)		Code	Subject	units	Bloom's Taxonomy
		EN.CV.HD.ACT1	Advanced Concrete Technology	2	understanding, applying and analyzing
		EN.CV.HD.CSD1	Computer Structural Design	2	understanding, applying and analyzing
		EN.CV.HD.HS1	Hydraulic Structures I	2	understanding, applying and analyzing
		EN.CV.HD.ASE1	Advanced Sanitary Engineering	2	understanding, applying and analyzing
		EN.CV.HD.GE1	Geotechnical Engineering	2	understanding, applying and analyzing
		EN.CV.HD.RE1	Roadways Engineering	2	understanding, applying and analyzing
		Total			12
Se	CO	Code	Subject	units	Bloom's Taxonomy

	EN.CV.HD.ND2	Networks Design	2	understanding, applying and analyzing
	EN.CV.HD.TPD2	Treatment Plants Design	2	understanding, applying and analyzing
	EN.CV.HD.WTPD2	Water Treatment Plants Design	2	understanding, applying and analyzing
	EN.CV.HD.P2	Plumbing	2	understanding, applying and analyzing
	EN.CV.HD.NASE2	Numerical Applications in Sanitary Engineering	2	understanding, applying and analyzing
	EN.CV.HD.TPSD2	Treatment Plants Structural Design	2	understanding, applying and analyzing
	Total		12	

**Units of 1st and 2nd Term = 24**

**Units of 3rd Term (Thesis) = 4**

**Total Unit = 28**

## H.D. Courses: Geotechnical Engineering

First Semester (General)	Code	Subject	units	Bloom's Taxonomy
	EN.CV.HD.ACT1	Advanced Concrete Technology	2	understanding, applying and analyzing
	EN.CV.HD.CSD1	Computer Structural Design	2	understanding, applying and analyzing
	EN.CV.HD.HS1	Hydraulic Structures I	2	understanding, applying and analyzing
	EN.CV.HD.ASE1	Advanced Sanitary Engineering	2	understanding, applying and analyzing
	EN.CV.HD.GE1	Geotechnical Engineering	2	understanding, applying and analyzing
	EN.CV.HD.RE1	Roadways Engineering	2	understanding, applying and analyzing
	Total		12	
Second Semester	Code	Subject	units	Bloom's Taxonomy
	EN.CV.HD.ASM2	Advanced Soil Mechanics	2	understanding, applying and analyzing

	EN.CV.HD.AFE2	Advanced Foundation Engineering	2	understanding, applying and analyzing
	EN.CV.HD.SIS2	Soil Improvement and Stabilization	2	understanding, applying and analyzing
	EN.CV.HD.GS2	Groundwater and Seepage	2	understanding, applying and analyzing
	EN.CV.HD.NAGE2	Numerical Applications in Geotechnical Engineering	2	understanding, applying and analyzing
	EN.CV.HD.SILT2	Site Investigations and Laboratory Tests	2	understanding, applying and analyzing
	Total		12	

**Units of 1st and 2nd Term = 24**

**Units of 3rd Term (Thesis) = 4**

**Total Unit = 28**



## H.D. Courses: Hydraulic Structures

	Code	Subject	units	Bloom's Taxonomy
First Semester (General)	EN.CV.HD.ACT1	Advanced Concrete Technology	2	understanding, applying and analyzing
	EN.CV.HD.CSD1	Computer Structural Design	2	understanding, applying and analyzing
	EN.CV.HD.HS1	Hydraulic Structures I	2	understanding, applying and analyzing
	EN.CV.HD.ASE1	Advanced Sanitary Engineering	2	understanding, applying and analyzing
	EN.CV.HD.GE1	Geotechnical Engineering	2	understanding, applying and analyzing

	EN.CV.HD.RE1	Roadways Engineering	2	understanding, applying and analyzing
	Total		12	
Second Semester (Dept. Requirements)	Code	Subject	units	Bloom's Taxonomy
	EN.CV.HD.DR2	Dams and Reservoirs	2	understanding, applying and analyzing
	EN.CV.HD.SDHS2	Structural Design of Hydraulic Structures	2	understanding, applying and analyzing
	EN.CV.HD.OCP2	Open Channels and Pipes	2	understanding, applying and analyzing
	EN.CV.HD.HG2	Hydrogeology	2	understanding, applying and analyzing
	EN.CV.HD.NA2	Numerical Applications	2	understanding, applying and analyzing
	EN.CV.HD.WCS2	Waterways Crossing Structures	2	understanding, applying and analyzing
	Total		12	

**Units of 1st and 2nd Term = 24**

**Units of 3rd Term (Thesis) = 4**

**Total Unit = 28**

## H.D. Courses: Construction Materials Engineering

First Semester (General)	Code	Subject	units	Bloom's Taxonomy
	EN.CV.HD.ACT1	Advanced Concrete Technology	2	understanding, applying and analyzing
	EN.CV.HD.CSD1	Computer Structural Design	2	understanding, applying and analyzing
	EN.CV.HD.HS1	Hydraulic Structures I	2	understanding, applying and analyzing
	EN.CV.HD.ASE1	Advanced Sanitary Engineering	2	understanding, applying and analyzing
	EN.CV.HD.GE1	Geotechnical Engineering	2	understanding, applying and analyzing
	EN.CV.HD.RE1	Roadways Engineering	2	understanding, applying and analyzing
	Total		12	
Second Semester	Code	Subject	units	Bloom's Taxonomy
	EN.CV.HD.CM2	Composite Materials	2	understanding, applying and analyzing

	EN.CV.HD.SCA2	Special Concrete and Additives	2	understanding, applying and analyzing
	EN.CV.HD.DBR2	Damaged Buildings Rehabilitation	2	understanding, applying and analyzing
	EN.CV.HD.DNDT2	Destructive and Nondestructive Tests	2	understanding, applying and analyzing
	EN.CV.HD.CDI2	Concrete Durability I	2	understanding, applying and analyzing
	EN.CV.HD.SA2	Statistical Applications	2	understanding, applying and analyzing
	Total		12	

**Units of 1st and 2nd Term = 24**

**Units of 3rd Term (Thesis) = 4**

**Total Unit = 28**

## H.D. Courses: Roadways Engineering

First Semester (General)	Code	Subject	units	Bloom's Taxonomy
	EN.CV.HD.ACT1	Advanced Concrete Technology	2	understanding, applying and analyzing
	EN.CV.HD.CSD1	Computer Structural Design	2	understanding, applying and analyzing
	EN.CV.HD.HS1	Hydraulic Structures I	2	understanding, applying and analyzing
	EN.CV.HD.ASE1	Advanced Sanitary Engineering	2	understanding, applying and analyzing
	EN.CV.HD.GE1	Geotechnical Engineering	2	understanding, applying and analyzing
	EN.CV.HD.RE1	Roadways Engineering	2	understanding, applying and analyzing
	Total		12	
Second Semester	Code	Subject	units	Bloom's Taxonomy
	EN.CV.HD.APDI2	Advanced Pavement	2	understanding, applying and analyzing

		Design I		
	EN.CV.HD.RPI2	Roadways Planning I	2	understanding, applying and analyzing
	EN.CV.HD.API2	Airports Engineering I	2	understanding, applying and analyzing
	EN.CV.HD.RDS2	Roadways Drainage Systems	2	understanding, applying and analyzing
	EN.CV.HD.ATEI2	Advanced Traffic Engineering I	2	understanding, applying and analyzing
	EN.CV.HD.RSA2	Statistical Applications	2	understanding, applying and analyzing
	Total		12	

**Units of 1st and 2nd Term = 24**

**Units of 3rd Term (Thesis) = 4**

**Total Unit = 28**