### **BACHELOR OF SCIENCE IN CIVIL ENGINEERING**

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	1	DRAW10W	ENGINEERING DRAWING	-	4.5	1.0				MVA
		ENG10	ENGLISH FOR ACADEMIC PURPOSES 1	4.5	-	3.0				SLHS
		HME01	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH10-3	ALGEBRA	4.5	-	3.0				MATH
		MATH12-1	PLANE AND SPHERICAL TRIGONOMETRY	4.5	-	3.0				MATH
		NSTP1	NATIONAL SERVICE TRAINING PROGRAM 1	-	4.5	(1.5)				SOCIP
		PE11-1	PHYSICAL EDUCATION 1 (PHYSICAL FITNESS AND GROUP GAMES)	-	3.0	(2.0)				ATHLETICS
L			Total	18.0	12.0	13.0			1	1

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	2	CAD10L	COMPUTER-AIDED DRAFTING	-	4.5	1.0	DRAW10W			MVA
		ENG11	ENGLISH FOR ACADEMIC PURPOSES 2	4.5	-	3.0	ENG10			SLHS
		FIL10	FILIPINO 1	4.5	-	3.0			•	SLHS
		HME02	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH10-4	ADVANCED ALGEBRA	4.5	-	3.0	MATH10-3			MATH
		MATH13-1	SOLID MENSURATION	3.0	-	2.0	MATH12-1			MATH
		NSTP2	NATIONAL SERVICE TRAINING PROGRAM 2	-	4.5	(1.5)	NSTP1			SOCIP
		PE12	PHYSICAL EDUCATION 2 (DANCE, MARTIAL ARTS AND BOARD GAMES)	-	3.0	(2.0)				ATHLETICS
		:	Total	21.0	12.0	15.0		:	2	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	3	CHM11-3	GENERAL CHEMISTRY 1	3.0	-	2.0				CHE-CHM
		CHM11-3L	GENERAL CHEMISTRY LABORATORY 1	-	4.5	1.0		CHM11-3		CHE-CHM
		FIL11	FILIPINO 2	4.5	-	3.0				SLHS
		HME03	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH21-1	CALCULUS 1	7.5	-	5.0	MATH13-1, MATH10-4			MATH

NSTP3	NATIONAL SERVICE TRAINING PROGRAM 3	-	4.5	(1.5)	NSTP2		SOCIP
PE13-2	PHYSICAL EDUCATION 3 (INDIVIDUAL / DUAL SPORTS)	-	3.0	(2.0)			ATHLETICS
	Total	19.5	12.0	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	4	CHM12-3	GENERAL CHEMISTRY 2	3.0	-	2.0	CHM11-3, CHM11-3L			CHE-CHM
		CHM12-3L	GENERAL CHEMISTRY LABORATORY 2	-	4.5	1.0	CHM11-3, CHM11-3L	CHM12-3	•	CHE-CHM
		CS10-1L	COMPUTER FUNDAMENTALS AND PROGRAMMING LABORATORY	-	9.0	2.0	MATH10-3			SOIT
		MATH22-1	CALCULUS 2	7.5	-	5.0	MATH21-1			MATH
		RZL10	RIZAL'S WORKS & WRITINGS OF OTHER FILIPINO HEROES	4.5	-	3.0				SLHS
		SSE01	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			•	SLHS
		NSTP4	NATIONAL SERVICE TRAINING PROGRAM 4	-	4.5	(1.5)	NSTP3			SOCIP
		PE14	PHYSICAL EDUCATION 4 (TEAM SPORTS)	-	3.0	(2.0)				ATHLETICS
			Total	19.5	21.0	16.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	1	BIO20	INTRODUCTION TO BIOMIMETICS ENGINEERING AND COMPONENT DESIGN	4.5	-	3.0	CHM12-3			CHE-CHM
		MATH23-1	CALCULUS 3	4.5	-	3.0	MATH22-1			MATH
		MATH23-1X	ENGINEERING MATHEMATICS EXIT EXAM	-	-	0.0	MATH22-1	MATH23-1	•	MATH
		PHY10	GENERAL PHYSICS 1	3.0	-	2.0	MATH22-1		•	PHYSICS
		PHY10L	GENERAL PHYSICS LABORATORY 1	-	4.5	1.0	MATH22-1	PHY10		PHYSICS
		SSE02	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			•	SLHS
		SSE03	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			•	SLHS
P			Total	21.0	4.5	15.0				-

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	2	CE151P	BUILDING SYSTEMS ENGINEERING	4.5	4.5	4.0	CAD10L			CEGE
		ESE150	ENVIRONMENTAL SCIENCE AND ENGINEERING	4.5	-	3.0	CHM12-3, CHM12-3L			CEGE

		Total	19.5	13.5	16.0			
PH	Y11L	GENERAL PHYSICS LABORATORY 2	-	4.5	1.0	PHY10, PHY10L	PHY11	PHYSICS
PH	Y11	GENERAL PHYSICS 2	3.0	-	2.0	PHY10, PHY10L		PHYSICS
MA	TH24-1	DIFFERENTIAL EQUATIONS	4.5	-	3.0	MATH23-1, MATH23-1X		MATH
MA	TH16-1L	INTRODUCTION TO SCIENTIFIC COMPUTING	-	4.5	1.0	MATH22-1, CS10-1L		MATH
MA	TH15-1	LINEAR ALGEBRA	3.0	-	2.0	MATH13-1, MATH10-4, 2nd Year Standing		MATH

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	3	CEM115-1	ENGINEERING AND FINANCIAL MANAGEMENT	4.5	-	3.0	CE151P			CEGE
		MATH30-5	PROBABILITY AND STATISTICS	4.5	-	3.0	MATH23-1			MATH
		ME21	BASIC MECHANICAL ENGINEERING	4.5	-	3.0	CE151P			MME
		MEC30	STATICS OF RIGID BODIES	4.5	-	3.0	PHY11, PHY11L	•		CEGE
		PHY12	GENERAL PHYSICS 3	3.0	-	2.0	PHY11, PHY11L			PHYSICS
		PHY12L	GENERAL PHYSICS LABORATORY 3	-	4.5	1.0	PHY11, PHY11L	PHY12		PHYSICS
<u> </u>		1	Total	21.0	4.5	15.0		1		1

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	4	CE50P	ADVANCED ENGINEERING MATHEMATICS	4.5	4.5	4.0	MATH24-1			CEGE
		EE24	BASIC ELECTRICAL ENGINEERING FOR CE	4.5	-	3.0	PHY12, PHY12L, MATH24-1			EECE
		ENG12	ENGLISH FOR THE WORKPLACE 1	4.5	-	3.0	ENG11			SLHS
		MEC31-1	DYNAMICS OF RIGID BODIES	3.0	-	2.0	MEC30	CE50P		MME
		PHY13	GENERAL PHYSICS 4	3.0	-	2.0	PHY12, PHY12L			PHYSICS
		PHY13L	GENERAL PHYSICS LABORATORY 4	-	4.5	1.0	PHY12, PHY12L	PHY13	•	PHYSICS
		PHY13X	GENERAL PHYSICS EXIT EXAM	-	-	0.0	PHY12, PHY12L	PHY13, PHY13L		PHYSICS
		1	Total	19.5	9.0	15.0		1	1	1

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	1	CE120-0	SURVEYING 1 (ELEMENTARY & HIGHER SURVEYING)	4.5	-	3.0	DRAW10W, MEC30		CE120- 0F	CEGE
		CE120-0F	SURVEYING FIELD 1 (ELEMENTARY & HIGHER SURVEYING)	-	9.0	2.0	DRAW10W, MEC30		CE120-0	CEGE
		CE140-1P	MECHANICS OF FLUIDS	3.0	4.5	3.0	MEC31-1, PHY13, PHY13L, PHY13X			CEGE
		CE140-1PX	MECHANICS OF FLUIDS EXIT EXAM	-	-	0.0	MEC31-1, PHY13, PHY13L, PHY13X	CE140-1P		CEGE
		CE141	HYDROLOGY	4.5	-	3.0	MATH30-5, ESE150			CEGE
		MEC32-1	MECHANICS OF DEFORMABLE BODIES	7.5	-	5.0	MEC31-1			CEGE
		MEC32-1X	ENGINEERING MECHANICS EXIT EXAM	-	-	0.0	MEC31-1	MEC32-1	•	CEGE
			Total	19.5	13.5	16.0		•		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	2	CE121	SURVEYING 2	4.5	-	3.0	CE120-0, CE120-0F		CE121F	CEGE
		CE121F	SURVEYING FIELD 2	-	9.0	2.0	CE120-0, CE120-0F		CE121	CEGE
		CE121X	SURVEYING EXIT EXAM	-	-	0.0	CE120-0, CE120-0F	CE121, CE121F		CEGE
		CE131P	THEORY OF STRUCTURES 1	4.5	4.5	4.0	MEC32-1, MEC32-1X, CE50P, CE151P			CEGE
		CE142P	HYDRAULICS, SYSTEMS AND STRUCTURES	3.0	4.5	3.0	CE140-1P, ME21, CE140-1PX			CEGE
		CE152P	CONSTRUCTION MATERIALS AND TESTING	3.0	4.5	3.0	CE151P, ESE150			CEGE
P			Total	15.0	22.5	15.0		•		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	3	CE122	TRAFFIC & HIGHWAY ENGINEERING	4.5	-	3.0	CE121, CE121F, CE121X			CEGE

	Total	19.5	4.5	14.0			
SFTY10	) SAFETY ENGINEERING MANAGEMENT	1.5	-	1.0	3rd Year Standing		CCESC
CE40	ENGINEERING ECONOMY	4.5	-	3.0	CE50P		CEGE
CE143	WATER SUPPLY ENGINEERING	4.5	-	3.0	CE142P, ESE150		CEGE
CE132P	X THEORY OF STRUCTURES 2 EXIT EXAM	-	-	0.0	CE131P, CE50P	CE132P	CEGE
CE132P	THEORY OF STRUCTURES 2	4.5	4.5	4.0	CE131P, CE50P		CEGE

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	4	CE123	TRANSPORTATION ENGINEERING	4.5	-	3.0	CE122			CEGE
		CE133P	STRUCTURAL DESIGN 1: REINFORCED CONCRETE	6.0	4.5	5.0	CE132P, CE132PX			CEGE
		CE144	SEWERAGE & DRAINAGE ENGINEERING	4.5	-	3.0	CE142P, CE143			CEGE
		CE161P	GEOTECHNICAL ENGINEERING 1 (SOIL MECHANICS)	4.5	4.5	4.0	CE142P	CE133P		CEGE
		CE161PX	GEOTECHNICAL ENGINEERING 1 (SOIL MECHANICS) EXIT EXAM	-	-	0.0	CE142P	CE161P		CEGE
			Total	19.5	9.0	15.0				

	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	1	CE134P	STRUCTURAL DESIGN 2 (STEEL & TIMBER)	6.0	4.5	5.0	CE133P			CEGE
		CE162P	GEOTECHNICAL ENGINEERING 2 (FOUNDATION ENGINEERING)	4.5	4.5	4.0	CE161P, CE161PX			CEGE
		ENG13	ENGLISH FOR THE WORKPLACE 2	4.5	-	3.0	ENG12			SLHS
		RES100-4	METHODS OF RESEARCH	3.0	-	2.0	MATH30- 5,4th Year Standing			CEGE
			Total	18.0	9.0	14.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	2	CE155	TECHNICAL ELECTIVE 1: ESTIMATING AND VALUE ENGINEERING	4.5	-	3.0	CE134P, CE152P			CEGE
		CE168P	CONSTRUCTION METHODS AND PROJECT MANAGEMENT	4.5	4.5	4.0	CE152P, CE40			CEGE

		Total	18.0	21.5	16.0			
CE2	200-01L	THESIS 1	-	4.5	1.0	CE134P, RES100-4, CE162P, CE123, CE144, ESE150, CE40		CEGE
CE1	98-1R	CE PRACTICUM 1		8.0	1.0	CE134P, CE162P, CE123, CE144		CEGE
CE1	95	CIVIL ENGINEERING LAWS, CONTRACTS, SPECIFICATIONS AND ETHICS	4.5	-	3.0	RES100-4		CEGE
CE1	82-1L	CIVIL ENGINEERING PROJECT 1		4.5	1.0	CE40, CE123, CE134P, CE144, CE162P, ESE150, RES100-4		CEGE
CE1	81	TECHNICAL ELECTIVE 2: ADVANCED TOPICS AND PROBLEMS IN STRUCTURAL ENGINEERING	4.5	-	3.0	CE134P		CEGE

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	3	CE119	TECHNICAL COMMUNICATION AND DOCUMENTATION	4.5	-	3.0	CE155, CE195			CEGE
		CE198-2R	CE PRACTICUM 2	-	8.0	1.0	CE198-1R			CEGE
		CE199-1L	CE CORRELATION 1	-	13.5	1.0	CE162P, CE181, CE123, CE198-1R, CE144, CE168P, For Graduating Students Only			CCESC
		SSE04	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
			PROFESSIONAL ELECTIVE 1	4.5	-	3.0				
			PROFESSIONAL ELECTIVE 2	4.5	-	3.0				
			Total	18.0	21.5	14.0			-	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	4	CE182-2L	CIVIL ENGINEERING PROJECT 2		4.5	1.0	CE182-1L			
		CE198-3R	CE PRACTICUM 3		8.0	1.0	CE198-2R			CEGE
		CE199-2L	CE CORRELATION 2	-	13.5	1.0	CE199-1L			CCESC
		CE200-02L	THESIS 2	-	4.5	1.0	CE200-01L			CEGE
			Total	0.0	30.5	4.0				

### **PROFESSIONAL ELECTIVES : 6. UNITS**

	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
	CE137	FINITE ELEMENT METHOD	4.5	-	3.0	CE134P,			CEGE
						4th Year			
						Standing			
·····	CE138	BRIDGE ENGINEERING	4.5	-	3.0	CE134P,			CEGE
						4th Year			
						Standing			
	CE139	SPECIAL TOPICS IN	4.5	-	3.0	CE134P.			CEGE
		STRUCTURAL				4th Year			
		ENGINEERING				Standing			
	CE145	WATER RESOURCES	4.5	-	3.0	ESE150,			CEGE
		MANAGEMENT AND				CE144, 4th			
		POLICIES				Year			
						Standing			
	CE146	URBAN HYDROLOGY AND	4.5	-	3.0	ESE150.			CEGE
	02110	FLOOD MANAGEMENT				CE144, 4th			0101
						Year			
						Standing			
	CE1/7	SPECIAL TOPICS IN WATER	15	_	3.0				CEGE
		RESOURCES ENGINEERING	4.5		5.0	CF144 4th			ULUL
						Year			
						Standing			
	05157		15		2.0	CE160D			CECE
	CE 137	MANAGEMENT (TQM/ QA-	4.5	-	3.0	Ath Year			UEGE
		QC)				Standing			
	05450		4 5		~ ~ ~	054000			0505
	CE158	METHODS	4.5	-	3.0	CE168P, 4th Voor			CEGE
						Standing			
						Standing			
	CE159	SPECIAL TOPICS IN	4.5	-	3.0	CE168P,			CEGE
		ENGINEERING &				4th Year			
		MANAGEMENT				Standing			
	CE163	GEOTECHNICAL	4.5	-	3.0	CE162P,			CEGE
		EARTHQUAKE				4th Year			
						Standing			
	CE164	GEOSYNTHETICS IN	4.5	-	3.0	CE162P,			CEGE
		GEOTECHNICAL				4th Year			
						Standing			
	CE165	SPECIAL TOPICS IN	4.5	-	3.0	CE162P,			CEGE
		GEOTECHNICAL & GEO-				4th Year			
						Standing			
	CE166	INTELLECTUAL PROPERTY	4.5	-	3.0	CF195 4th			CEGE
		RIGHTS IN ENGINEERING				Year			-
						Standing			
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CE17	1 PLANN TRANS	ING OF MASS PORTATION SYSTEM	4.5	-	3.0	CE123, 4th Year Standing		CEGE
CE17	2 TRAFF ASSES	IC IMPACT SMENT	4.5	-	3.0	CE123, 4th Year Standing		CEGE
CE17	3 SPECIA TRANS ENGINI	AL TOPICS IN PORTATION EERING	4.5	-	3.0	CE123, 4th Year Standing		CEGE
ESE1	81 WATEF QUALIT AND PF	RESOURCES TY MANAGEMENT RACTICE	4.5	-	3.0	ESE150, 4th Year Standing		CEGE
ESE1	82 INDUS HAZAR TREAT	TRIAL AND DOUS WATER MENT AND DISPOSAL	4.5	-	3.0	ESE150, 4th Year Standing		CEGE
ESE1	83 SOLID WASTE	AND HAZARDOUS E ENGINEERING	4.5	-	3.0	ESE150, 4th Year Standing		CEGE
ESE1	84 GROUN HYDRC	NDWATER DLOGY	4.5	-	3.0	ESE150, 4th Year Standing		CEGE
ESE1	87 SUSTA	INABLE SANITATION	4.5	-	3.0	ESE150, 4th Year Standing		CEGE
ESE1	88 CLIMAT MITIGA	TE CHANGE TION & ADAPTATION	4.5	-	3.0	ESE150, 4th Year Standing	 <b>*</b>	CEGE

Total Academic Units : 227.00

## BACHELOR OF SCIENCE IN CONSTRUCTION ENGINEERING AND MANAGEMENT

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	1	DRAW10W	ENGINEERING DRAWING	-	4.5	1.0				MVA
		ENG10	ENGLISH FOR ACADEMIC PURPOSES 1	4.5	-	3.0				SLHS
		HME01	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH10-3	ALGEBRA	4.5	-	3.0				MATH
		MATH12-1	PLANE AND SPHERICAL TRIGONOMETRY	4.5	-	3.0				MATH
		NSTP1	NATIONAL SERVICE TRAINING PROGRAM 1	-	4.5	(1.5)				SOCIP
		PE11-1	PHYSICAL EDUCATION 1 (PHYSICAL FITNESS AND GROUP GAMES)	-	3.0	(2.0)			<b>9</b>	ATHLETICS
		2	Total	18.0	12.0	13.0	2	:	2	:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	2	CAD10L	COMPUTER-AIDED DRAFTING	-	4.5	1.0	DRAW10W			MVA
		ENG11	ENGLISH FOR ACADEMIC PURPOSES 2	4.5	-	3.0	ENG10			SLHS
		FIL10	FILIPINO 1	4.5	-	3.0		•	•	SLHS
		MATH10-4	ADVANCED ALGEBRA	4.5	-	3.0	MATH10-3			MATH
		MATH13-1	SOLID MENSURATION	3.0	-	2.0	MATH12-1		•	MATH
		SSE01	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
		NSTP2	NATIONAL SERVICE TRAINING PROGRAM 2	-	4.5	(1.5)	NSTP1			SOCIP
		PE12	PHYSICAL EDUCATION 2 (DANCE, MARTIAL ARTS AND BOARD GAMES)	-	3.0	(2.0)				ATHLETICS
		2	Total	21.0	12.0	15.0		:	2	:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	3	CHM11-3	GENERAL CHEMISTRY 1	3.0	-	2.0				CHE-CHM
		CHM11-3L	GENERAL CHEMISTRY LABORATORY 1	-	4.5	1.0		CHM11-3		CHE-CHM
		FIL11	FILIPINO 2	4.5	-	3.0			•	SLHS
		MATH21-1	CALCULUS 1	7.5	-	5.0	MATH13-1, MATH10-4			MATH
		SSE02	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS

NSTP3	NATIONAL SERVICE TRAINING PROGRAM 3	-	4.5	(1.5)	NSTP2		SOCIP
PE13-2	PHYSICAL EDUCATION 3 (INDIVIDUAL / DUAL SPORTS)	-	3.0	(2.0)			ATHLETICS
	Total	19.5	12.0	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	4	CEM111	MICROECONOMICS	4.5	-	3.0	MATH21-1			CEGE
		CHM12-3	GENERAL CHEMISTRY 2	3.0	-	2.0	CHM11-3, CHM11-3L		•	CHE-CHM
		CHM12-3L	GENERAL CHEMISTRY LABORATORY 2	-	4.5	1.0	CHM11-3, CHM11-3L	CHM12-3		CHE-CHM
		HME02	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH22-1	CALCULUS 2	7.5	-	5.0	MATH21-1			MATH
		NSTP4	NATIONAL SERVICE TRAINING PROGRAM 4	-	4.5	(1.5)	NSTP3			SOCIP
		PE14	PHYSICAL EDUCATION 4 (TEAM SPORTS)	-	3.0	(2.0)			•	ATHLETICS
			Total	19.5	12.0	14.0		,		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	1	BIO20	INTRODUCTION TO BIOMIMETICS ENGINEERING AND COMPONENT DESIGN	4.5	-	3.0	CHM12-3			CHE-CHM
		CS10-1L	COMPUTER FUNDAMENTALS AND PROGRAMMING LABORATORY	-	9.0	2.0	MATH10-3			SOIT
		HME03	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH23-1	CALCULUS 3	4.5	-	3.0	MATH22-1			MATH
		PHY10	GENERAL PHYSICS 1	3.0	-	2.0	MATH22-1			PHYSICS
		PHY10L	GENERAL PHYSICS LABORATORY 1	-	4.5	1.0	MATH22-1	PHY10		PHYSICS
		2	Total	16.5	13.5	14.0		:	-	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	2	CE151P	BUILDING SYSTEMS ENGINEERING	4.5	4.5	4.0	CAD10L			CEGE
		CEM112	MANAGEMENT THEORIES AND PRINCIPLES	4.5	-	3.0	MATH23-1			CEGE
		MATH15-1	LINEAR ALGEBRA	3.0	-	2.0	MATH13-1, MATH10-4, 2nd Year Standing			MATH

MATH24-1	DIFFERENTIAL EQUATIONS	4.5	-	3.0	MATH23-1			MATH
PHY11	GENERAL PHYSICS 2	3.0	-	2.0	PHY10, PHY10L			PHYSICS
PHY11L	GENERAL PHYSICS LABORATORY 2	-	4.5	1.0	PHY10, PHY10L	PHY11	•	PHYSICS
	Total	19.5	9.0	15.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	3	ESE150	ENVIRONMENTAL SCIENCE AND ENGINEERING	4.5	-	3.0	CHM12-3, CHM12-3L			CEGE
		MATH30-5	PROBABILITY AND STATISTICS	4.5	-	3.0	MATH23-1			MATH
		MEC30	STATICS OF RIGID BODIES	4.5	-	3.0	PHY11, PHY11L			CEGE
		PHY12	GENERAL PHYSICS 3	3.0	-	2.0	PHY11, PHY11L			PHYSICS
		PHY12L	GENERAL PHYSICS LABORATORY 3	-	4.5	1.0	PHY11, PHY11L	PHY12		PHYSICS
		RZL10	RIZAL'S WORKS & WRITINGS OF OTHER FILIPINO HEROES	4.5	-	3.0				SLHS
			Total	21.0	4.5	15.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	4	CEM114	MACROECONOMICS	4.5	-	3.0	CEM111			CEGE
		ENG12	ENGLISH FOR THE WORKPLACE 1	4.5	-	3.0	ENG11			SLHS
		ME21	BASIC MECHANICAL ENGINEERING	4.5	-	3.0	CE151P		•	MME
		MEC31-1	DYNAMICS OF RIGID BODIES	3.0	-	2.0	MEC30			MME
		SSE03	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
			Total	21.0	0.0	14.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	1	CE120-0	SURVEYING 1 (ELEMENTARY & HIGHER SURVEYING)	4.5	-	3.0	DRAW10W, MEC30		CE120- 0F	CEGE
		CE120-0F	SURVEYING FIELD 1 (ELEMENTARY & HIGHER SURVEYING)	-	9.0	2.0	DRAW10W, MEC30		CE120-0	CEGE
		CE140-1P	MECHANICS OF FLUIDS	3.0	4.5	3.0	MEC31-1, PHY12, PHY12L			CEGE
		CEM130	CONSTRUCTION SAFETY MANAGEMENT	4.5	-	3.0	MEC30, 3rd Year Standing			CEGE

MEC32	MECHANICS OF DEFORMABLE BODIES	4.5	-	3.0	MEC31-1		CEGE
	Total	16.5	13.5	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	2	CE121	SURVEYING 2	4.5	-	3.0	CE120-0, CE120-0F		CE121F	CEGE
		CE121F	SURVEYING FIELD 2	-	9.0	2.0	CE120-0, CE120-0F		CE121	CEGE
		CE131-1	THEORY OF STRUCTURES	4.5	-	3.0	MEC32, CE151P			CEGE
		CEM115-1	ENGINEERING AND FINANCIAL MANAGEMENT	4.5	-	3.0	CEM112		•	CEGE
		CEM131	QUANTITY SURVEYING	4.5	-	3.0	CE151P		•	CEGE
			Total	18.0	9.0	14.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	3	CE152P	CONSTRUCTION MATERIALS AND TESTING	3.0	4.5	3.0	CE151P, ESE150			CEGE
		CE161P	GEOTECHNICAL ENGINEERING 1 (SOIL MECHANICS)	4.5	4.5	4.0	MEC32			CEGE
		CEM119	MARKETING MANAGEMENT IN CONSTRUCTION	4.5	-	3.0	CEM115-1			CEGE
		ESE131P	SANITARY SCIENCE, FIRE PROTECTION AND PLUMBING AS APPLIED TO BUILDING	4.5	4.5	4.0	DRAW10W, CE151P			CEGE
			Total	16.5	13.5	14.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	4	CE135-1	STRUCTURAL DESIGN OF REINFORCED CONCRETE	4.5	-	3.0	CE131-1			CEGE
		CEM120	HUMAN RESOURCE MANAGEMENT IN CONSTRUCTION	4.5	-	3.0	CEM119			CEGE
		CEM132	PROCUREMENT AND PURCHASING MANAGEMENT	4.5	-	3.0	CEM131		• •	CEGE
		EE24	BASIC ELECTRICAL ENGINEERING FOR CE	4.5	-	3.0	PHY12, PHY12L, MATH24-1			EECE
		ENG13	ENGLISH FOR THE WORKPLACE 2	4.5	-	3.0	ENG12		÷	SLHS
-			Total	22.5	0.0	15.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	1	CE122	TRAFFIC & HIGHWAY ENGINEERING	4.5	-	3.0	CE121, CE121F			CEGE
		CE137-1	STRUCTURAL DESIGN OF STEEL & TIMBER	4.5	-	3.0	CE135-1, CE151P			CEGE
		CE162P	GEOTECHNICAL ENGINEERING 2 (FOUNDATION ENGINEERING)	4.5	4.5	4.0	CE161P, CE135-1			CEGE
		CE40	ENGINEERING ECONOMY	4.5	-	3.0	CE151P			CEGE
		RES100-4	METHODS OF RESEARCH	3.0	-	2.0	MATH30-5			CEGE
			Total	21.0	4.5	15.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	2	CE168P	CONSTRUCTION METHODS AND PROJECT MANAGEMENT	4.5	4.5	4.0	CE152P			CEGE
		CEM116	ENTREPRENEURSHIP IN CONSTRUCTION	4.5	-	3.0	CEM114			CEGE
		CEM198-1R	PRACTICUM 1	-	8.0	1.0	CE162P, CE135-1	CE168P		CEGE
		CEM200- 01L	THESIS 1	-	4.5	1.0	RES100-4, CE140-1P, CE162P, CE137-1, CE122, ESE150, CE40			CEGE
			PROFESSIONAL ELECTIVE 1	4.5	-	3.0				
			Total	13.5	17.0	12.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	3	CE157	TOTAL QUALITY MANAGEMENT (TQM/ QA- QC)	4.5	-	3.0	CE168P,4th Year Standing			CEGE
		CEM124	CONTRACT ADMINISTRATION	4.5	-	3.0	CE151P, CE168P			CEGE
		CEM182-1L	CONSTRUCTION ENGINEERING & MANAGEMENT PROJECT 1		4.5	1.0	CE40, CE122, CE137-1, CE162P, ESE150, RES100-4			CEGE
		CEM198-2R	PRACTICUM 2	-	8.0	1.0	CEM198-1R			CEGE
		CEM200- 02L	THESIS 2	-	4.5	1.0	CEM200-01L		•	CEGE
			PROFESSIONAL ELECTIVE 2	4.5	-	3.0				
P			Total	13.5	17.0	12.0				

/r Qtr Code Title	Lec Lab Hrs Hrs	Credit Units Prereq.	Co- requisites Paired	Caretaker
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4	4 CE	195	CIVIL ENGINEERING LAWS, CONTRACTS, SPECIFICATIONS AND ETHICS	4.5	-	3.0	RES100-4, CE135-1		CEGE
	CE	M125	ENGINEERING LEADERSHIP	4.5	-	3.0	CE151P		CEGE
	CE	M198-3R	PRACTICUM 3		8.0	1.0	CEM198-2R		CEGE
	CE	M182-2L	CONSTRUCTION ENGINEERING & MANAGEMENT PROJECT 2	-	4.5	1.0	CEM1821L		CEGE
	SS	E04	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			SLHS
			Total	13.5	12.5	11.0		-	

### **PROFESSIONAL ELECTIVES : 6.0 UNITS**

	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
·	CE137	FINITE ELEMENT METHOD	4.5	-	3.0	CE137-1			CEGE
	CE159	SPECIAL TOPICS IN CONSTRUCTION ENGINEERING & MANAGEMENT	4.5	-	3.0	CE162P			CEGE
	CE164	GEOSYNTHETICS IN GEOTECHNICAL ENGINEERING	4.5	-	3.0	CE162P			CEGE
	CE166	INTELLECTUAL PROPERTY RIGHTS IN ENGINEERING	4.5	-	3.0	4th Year Standing			CEGE
	ESE182	INDUSTRIAL AND HAZARDOUS WATER TREATMENT AND DISPOSAL	4.5	-	3.0	ESE150, 4th Year Standing			CEGE
	ESE184	GROUNDWATER HYDROLOGY	4.5	-	3.0	ESE150, 4th Year Standing			CEGE
	ESE188	CLIMATE CHANGE MITIGATION & ADAPTATION	4.5	-	3.0	ESE150, 4th Year Standing			CEGE
	CE138	BRIDGE ENGINEERING	4.5	-	3.0	CE137-1			CEGE
	CE139	SPECIAL TOPICS IN STRUCTURAL ENGINEERING	4.5	-	3.0	CE168P			CEGE
	CE158	ADVANCED CONSTRUCTION METHODS	4.5	-	3.0	CE168P			CEGE
	CE163	GEOTECHNICAL EARTHQUAKE ENGINEERING	4.5	-	3.0	CE162P			CEGE
	CE165	SPECIAL TOPICS IN GEOTECHNICAL & GEO- ENVIRONMENTAL ENGINEERING	4.5	-	3.0	CE162P			CEGE
	ESE181	WATER RESOURCES QUALITY MANAGEMENT AND PRACTICE	4.5	-	3.0	ESE150, 4th Year Standing			CEGE
	ESE183	SOLID AND HAZARDOUS WASTE ENGINEERING	4.5	-	3.0	ESE150, 4th Year Standing			CEGE

	ESE187	SUSTAINABLE SANITATION	4.5	-	3.0	ESE150,		CEGE
						4th Year		
						Standing		

Total Academic Units : 221.00

# BACHELOR OF SCIENCE IN CIVIL ENGINEERING AND ENVIRONMENTAL AND SANITARY ENGINEERING (DOUBLE DEGREE)

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	1	DRAW10W	ENGINEERING DRAWING	-	4.5	1.0				MVA
		ENG10	ENGLISH FOR ACADEMIC PURPOSES 1	4.5	-	3.0				SLHS
		HME01	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			•	SLHS
		MATH10-3	ALGEBRA	4.5	-	3.0		•	•	MATH
		MATH12-1	PLANE AND SPHERICAL TRIGONOMETRY	4.5	-	3.0				MATH
		NSTP1	NATIONAL SERVICE TRAINING PROGRAM 1	-	4.5	(1.5)				SOCIP
		PE11-1	PHYSICAL EDUCATION 1 (PHYSICAL FITNESS AND GROUP GAMES)	-	3.0	(2.0)		•	<b>8</b>	ATHLETICS
		:	Total	18.0	12.0	13.0		:	:	:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	2	CAD10L	COMPUTER-AIDED DRAFTING	-	4.5	1.0	DRAW10W			MVA
		ENG11	ENGLISH FOR ACADEMIC PURPOSES 2	4.5	-	3.0	ENG10			SLHS
		HME02	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
		MATH10-4	ADVANCED ALGEBRA	4.5	-	3.0	MATH10-3			MATH
		MATH13-1	SOLID MENSURATION	3.0	-	2.0	MATH12-1			MATH
		RZL10	RIZAL'S WORKS & WRITINGS OF OTHER FILIPINO HEROES	4.5	-	3.0			•	SLHS
		NSTP2	NATIONAL SERVICE TRAINING PROGRAM 2	-	4.5	(1.5)	NSTP1		å	SOCIP
		PE12	PHYSICAL EDUCATION 2 (DANCE, MARTIAL ARTS AND BOARD GAMES)	-	3.0	(2.0)				ATHLETICS
L			Total	21.0	12.0	15.0		1		1

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	3	CHM11-3	GENERAL CHEMISTRY 1	3.0	-	2.0				CHE-CHM
		CHM11-3L	GENERAL CHEMISTRY LABORATORY 1	-	4.5	1.0		CHM11-3		CHE-CHM
		FIL10	FILIPINO 1	4.5	-	3.0				SLHS
		HME03	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS

Ν	MATH21-1	CALCULUS 1	7.5	-	5.0	MATH13-1, MATH10-4		MATH
Ν	NSTP3	NATIONAL SERVICE TRAINING PROGRAM 3	-	4.5	(1.5)	NSTP2		SOCIP
P	PE13-2	PHYSICAL EDUCATION 3 (INDIVIDUAL / DUAL SPORTS)	-	3.0	(2.0)			ATHLETICS
		Total	19.5	12.0	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	4	CHM12-3	GENERAL CHEMISTRY 2	3.0	-	2.0	CHM11-3, CHM11-3L			CHE-CHM
		CHM12-3L	GENERAL CHEMISTRY LABORATORY 2	-	4.5	1.0	CHM11-3, CHM11-3L	CHM12-3		CHE-CHM
		CS10-1L	COMPUTER FUNDAMENTALS AND PROGRAMMING LABORATORY	-	9.0	2.0	MATH10-3			SOIT
		FIL11	FILIPINO 2	4.5	-	3.0				SLHS
		MATH22-1	CALCULUS 2	7.5	-	5.0	MATH21-1			MATH
		SSE01	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
		NSTP4	NATIONAL SERVICE TRAINING PROGRAM 4	-	4.5	(1.5)	NSTP3			SOCIP
		PE14	PHYSICAL EDUCATION 4 (TEAM SPORTS)	-	3.0	(2.0)				ATHLETICS
P			Total	19.5	21.0	16.0		•	-	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	1	BIO20	INTRODUCTION TO BIOMIMETICS ENGINEERING AND COMPONENT DESIGN	4.5	-	3.0	CHM12-3			CHE-CHM
		SSE02	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			•	SLHS
		MATH15-1	LINEAR ALGEBRA	3.0	-	2.0	MATH13-1, MATH10-4, 2nd Year Standing			MATH
		MATH16-1L	INTRODUCTION TO SCIENTIFIC COMPUTING	-	4.5	1.0	MATH22-1, CS10-1L			MATH
		MATH23-1	CALCULUS 3	4.5	-	3.0	MATH22-1			MATH
		MATH23-1X	ENGINEERING MATHEMATICS EXIT EXAM	-	-	0.0	MATH22-1	MATH23-1		MATH
		PHY10	GENERAL PHYSICS 1	3.0	-	2.0	MATH22-1	•	•	PHYSICS
		PHY10L	GENERAL PHYSICS LABORATORY 1	-	4.5	1.0	MATH22-1	PHY10		PHYSICS
		2	Total	19.5	9.0	15.0		:	2	:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	2	CE151P	BUILDING SYSTEMS ENGINEERING	4.5	4.5	4.0	CAD10L			CEGE

	Total	21.0	9.0	16.0			
SSE03	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			SLHS
PHY11L	GENERAL PHYSICS LABORATORY 2	-	4.5	1.0	PHY10, PHY10L	PHY11	PHYSICS
PHY11	GENERAL PHYSICS 2	3.0	-	2.0	PHY10, PHY10L		PHYSICS
MATH24-1	DIFFERENTIAL EQUATIONS	4.5	-	3.0	MATH23-1, MATH23-1X		MATH
ESE150	ENVIRONMENTAL SCIENCE AND ENGINEERING	4.5	-	3.0	CHM12-3, CHM12-3L		CEGE

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	3	CE50P	ADVANCED ENGINEERING MATHEMATICS	4.5	4.5	4.0	MATH24-1			CEGE
		ESE152	ECOLOGY AND ENVIRONMENTAL POLLUTION	4.5	-	3.0	ESE150			CEGE
		MATH30-5	PROBABILITY AND STATISTICS	4.5	-	3.0	MATH23-1			MATH
		MEC30	STATICS OF RIGID BODIES	4.5	-	3.0	PHY11, PHY11L			CEGE
		PHY12	GENERAL PHYSICS 3	3.0	-	2.0	PHY11, PHY11L		• •	PHYSICS
		PHY12L	GENERAL PHYSICS LABORATORY 3	-	4.5	1.0	PHY11, PHY11L	PHY12		PHYSICS
		2	Total	21.0	9.0	16.0		:	2	:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	4	CE120-0	SURVEYING 1 (ELEMENTARY & HIGHER SURVEYING)	4.5	-	3.0	DRAW10W, MEC30		CE120- 0F	CEGE
		CE120-0F	SURVEYING FIELD 1 (ELEMENTARY & HIGHER SURVEYING)	-	9.0	2.0	DRAW10W, MEC30		CE120-0	CEGE
		EE24	BASIC ELECTRICAL ENGINEERING FOR CE	4.5	-	3.0	PHY12, PHY12L, MATH24-1			EECE
		MEC31-1	DYNAMICS OF RIGID BODIES	3.0	-	2.0	MEC30		•	MME
		PHY13	GENERAL PHYSICS 4	3.0	-	2.0	PHY12, PHY12L			PHYSICS
		PHY13L	GENERAL PHYSICS LABORATORY 4	-	4.5	1.0	PHY12, PHY12L	PHY13		PHYSICS
		PHY13X	GENERAL PHYSICS EXIT EXAM	-	-	0.0	PHY12, PHY12L	PHY13, PHY13L		PHYSICS
		SSE04	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
			Total	19.5	13.5	16.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	1	CE121	SURVEYING 2	4.5	-	3.0	CE120-0, CE120-0F		CE121F	CEGE
		CE121F	SURVEYING FIELD 2	-	9.0	2.0	CE120-0, CE120-0F		CE121	CEGE
		CE121X	SURVEYING EXIT EXAM	-	-	0.0	CE120-0, CE120-0F	CE121, CE121F		CEGE
		CE140-1P	MECHANICS OF FLUIDS	3.0	4.5	3.0	MEC31-1, PHY13, PHY13L, PHY13X		•	CEGE
		CE140-1PX	MECHANICS OF FLUIDS EXIT EXAM	-	-	0.0	MEC31-1, PHY13, PHY13L, PHY13X	CE140-1P		CEGE
		CE40	ENGINEERING ECONOMY	4.5	-	3.0	CE50P, CE151P			CEGE
		MEC32-1	MECHANICS OF DEFORMABLE BODIES	7.5	-	5.0	MEC31-1			CEGE
		MEC32-1X	ENGINEERING MECHANICS EXIT EXAM	-	-	0.0	MEC31-1	MEC32-1	•	CEGE
			Total	19.5	13.5	16.0			-	•

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	2	CE131P	THEORY OF STRUCTURES 1	4.5	4.5	4.0	MEC32-1, MEC32-1X, CE50P, CE151P			CEGE
		CE141	HYDROLOGY	4.5	-	3.0	CE140-1P, CE140-1PX, MATH30-5			CEGE
		ESE142P	ENVIRONMENTAL AND SANITARY CHEMISTRY	3.0	4.5	3.0	CHM12-3			CEGE
		ESE153L	ENVIRONMENTAL ENGINEERING LABORATORY	-	4.5	1.0	ESE152			CEGE
		ESE160	ENGINEERING GEOLOGY	1.5	-	1.0	PHY13, PHY13L, PHY13X		• •	CEGE
		ME21	BASIC MECHANICAL ENGINEERING	4.5	-	3.0	PHY13, CE151P	*	*	MME
		SFTY100	SAFETY ENGINEERING MANAGEMENT	1.5	-	1.0	3rd Year Standing		•	CCESC
			Total	19.5	13.5	16.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	3	CE132P	THEORY OF STRUCTURES 2	4.5	4.5	4.0	CE131P, CE50P			CEGE

		46 5	40.0	45.0			
ESE141-0P	MICROBIOLOGY AND PARASITOLOGY FOR ENVIRONMENTAL AND SANITARY ENGINEERING	4.5	4.5	4.0	ESE150, ESE142P		CEGE
CE161PX	GEOTECHNICAL ENGINEERING 1 (SOIL MECHANICS) EXIT EXAM	-	-	0.0	MEC32-1, MEC32-1X, CE140-1P, CE140-1PX, ESE160	CE161P	CEGE
CE161P	GEOTECHNICAL ENGINEERING 1 (SOIL MECHANICS)	4.5	4.5	4.0	MEC32-1, CE140-1P, ESE160, CE140-1PX, MEC32-1X		CEGE
CE142P	HYDRAULICS, SYSTEMS AND STRUCTURES	3.0	4.5	3.0	CE141, ME21, CE140-1PX, CAD10L, CE131P		CEGE
CE132PX	THEORY OF STRUCTURES 2 EXIT EXAM	-	-	0.0	CE131P, CE50P	CE132P	CEGE

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	4	CE133P	STRUCTURAL DESIGN 1: REINFORCED CONCRETE	6.0	4.5	5.0	CE132P, CE132PX			CEGE
		CE162P	GEOTECHNICAL ENGINEERING 2 (FOUNDATION ENGINEERING)	4.5	4.5	4.0	CE161P, CE161PX			CEGE
		ESE132	PUBLIC HEALTH ENGINEERING	4.5	-	3.0	ESE142P, ESE141-0P			CEGE
		ESE161	GROUND WATER AND SOIL POLLUTION REMEDIATION	4.5	-	3.0	ESE141-0P, CE161P, ESE160, CE142P			CEGE
-		-	Total	19.5	9.0	15.0		•		•

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	1	CE134P	STRUCTURAL DESIGN 2 (STEEL & TIMBER)	6.0	4.5	5.0	CE133P	CE152P		CEGE
		CE143	WATER SUPPLY ENGINEERING	4.5	-	3.0	CE142P, ESE132, ESE141-0P			CEGE
		CE152P	CONSTRUCTION MATERIALS AND TESTING	3.0	4.5	3.0	CE151P, CE142P, ESE153L			CEGE
		ESE133-0	OCCUPATIONAL HEALTH AND SAFETY	3.0	-	2.0	ESE142P, ESE141-0P			CEGE
		ESE151	SOLID WASTES MANAGEMENT	3.0	-	2.0	ESE150, ESE141-0P, ESE142P			CEGE

Total	19.5	9.0	15.0

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	2	CE144	SEWERAGE & DRAINAGE ENGINEERING	4.5	-	3.0	CE142P, CE143, ESE141-0P, ESE151			CEGE
		CE155	TECHNICAL ELECTIVE 1: ESTIMATING AND VALUE ENGINEERING	4.5	-	3.0	CE152P,4th Year Standing			CEGE
		CE168P	CONSTRUCTION METHODS AND PROJECT MANAGEMENT	4.5	4.5	4.0	CE152P, CE151P	ESE125		CEGE
		ESE125	DESIGN OF ENVIRONMENTAL AND SANITARY ENGINEERING STRUCTURES.	3.0	-	2.0	CE131P, ESE152, CE142P, CE140-1P, CE140-1PX			CEGE
		ESE131P	SANITARY SCIENCE, FIRE PROTECTION AND PLUMBING AS APPLIED TO BUILDING	4.5	4.5	4.0	ESE133-0, CE151P, CE143, ME21, EE24			CEGE
<b>F</b>			Total	21.0	9.0	16.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	3	CE122	TRAFFIC & HIGHWAY ENGINEERING	4.5	-	3.0	CE121, CE121F, CE121X, CE152P			CEGE
		CEM115-1	ENGINEERING AND FINANCIAL MANAGEMENT	4.5	-	3.0	CE151P, CE142P, CE168P			CEGE
		ENG12	ENGLISH FOR THE WORKPLACE 1	4.5	-	3.0	ENG11			SLHS
		ESE122P	SEWAGE AND INDUSTRIAL WASTEWATER TREATMENT PROCESSES AND DESIGN	6.0	4.5	5.0	ESE141-0P, ESE142P, CE144, ESE125			CEGE
		ESE122PX	SEWAGE AND INDUSTRIAL WASTEWATER TREATMENT PROCESSES AND DESIGN EXIT EXAM	-	-	0.0	ESE141-0P, ESE142P, CE144, ESE125	ESE122P		CEGE
		ESE194	SPECIAL TOPICS IN ENVIRONMENTAL ENGINEERING	1.5	-	1.0	ESE141-0P			CEGE
			Total	21.0	4.5	15.0				

fr Qtr Code Title	Lec Lab Hrs Hrs	Credit Units Prereq.	Co- requisites Paired	Caretaker
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4 4	CE181	TECHNICAL ELECTIVE 2: ADVANCED TOPICS AND PROBLEMS IN STRUCTURAL ENGINEERING	4.5	-	3.0	CE134P, ESE125,4th Year Standing		CEGE
	ENG13	ENGLISH FOR THE WORKPLACE 2	4.5	-	3.0	ENG12		SLHS
	ESE144-0	WATER PURIFICATION PROCESSES DESIGN	6.0	-	4.0	CE143, ESE142P, ESE141-0P, ESE125		CEGE
	ESE144-0X	WATER PURIFICATION PROCESSES DESIGN EXIT EXAM	-	-	0.0	CE143, ESE141-0P, ESE125, ESE142P	ESE144-0	CEGE
	ESE158	RISK AND BENEFIT ANALYSIS IN ENVIRONMENTAL AND SANITARY ENGINEERING	4.5	-	3.0	ESE131P, CE152P, MATH30-5		CEGE
		3	4.5	-	3.0			
		Total	24.0	0.0	16.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
5	1	CE119	TECHNICAL COMMUNICATION AND DOCUMENTATION	4.5	-	3.0	CE155			CEGE
		CESE195	ENGINEERING LAWS, CONTRACTS, SPECIFICATIONS AND ETHICS	4.5	-	3.0	CE133P			CEGE
		ESE156	ENVIRONMENTAL PLANNING, LAWS AND IMPACT ASSESSMENT	4.5	-	3.0	ESE132, ESE152, CE168P, ESE158, ESE122PX, ESE144-0X, ESE144-0 ESE144-0			CEGE
		ESE156X	ENVIRONMENTAL PLANNING, LAWS AND IMPACT ASSESSMENT EXIT EXAM	-	-	0.0	ESE132, ESE152, CE168P, ESE158, ESE122P, ESE122PX, ESE144-0, ESE144-0X	ESE156		CEGE
		RES100-4	METHODS OF RESEARCH	3.0	-	2.0	ENG13, ESE141-0P		• •	CEGE
			PROFESSIONAL ELECTIVE 4	4.5	-	3.0				
			Total	21.0	0.0	14.0				

Yr Qtr Code Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
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5	2	CESE182- 1L	CIVIL, ENVIRONMENTAL & SANITARY ENGINEERING PROJECT 1		4.5	1.0	CE133P, CE134P, CE162P, ESE131P, ESE156, RES100-4		
5	2	CE199-1L	CE CORRELATION 1	-	13.5	1.0	CE162P, CE181, CE144, CE168P, CE119,5th Year Standing	CESE198- 1R	CCESC
		CSE200- 01L	THESIS 1		4.5	1.0	CE133P, CE134P, CE162P, ESE131P, ESE156, RES100-4		CEGE
		CESE198- 1R	CE/ENSE PRACTICUM 1	-	16.0	2.0	ESE122PX, ESE144-0X, CE195, CE134P, ESE132, ESE152, CE168P, ESE158, CE144, CE155, CE162P	CESE200L	CEGE
		ESE199-1L	ENSE CORRELATION COURSE 1	-	13.5	1.0	ESE156X, CE40, ESE122P, ESE144-0, ESE156, CE195, RES100-4	CESE198- 1R	CCESC
			Total	0.0	52.0	6.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
5	3	CE199-2L	CE CORRELATION 2	-	13.5	1.0	CE199-1L			CCESC
		CESE198- 2R	CE/ENSE PRACTICUM 2	-	16.0	2.0	CESE198-1R			CEGE
		ESE199-2L	ENSE CORRELATION COURSE 2	-	13.5	1.0	ESE199-1L			CCESC
			Total	0.0	43.0	40				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
5	4	CESE182- 2L	CIVIL, ENVIROMENTAL & SANITARY ENGINEERING PROJECT 2		4.5	1.0	CESE182-1L			
		CE199-3L	CE CORRELATION 3	-	13.5	1.0	CE199-2L			CCESC
		CESE198- 3R	CE/ENSE PRACTICUM 3		16.0	2.0	CESE198-2R			CEGE
		CSE200- 02L	THESIS 2	-	4.5	1.0	CSE200-01L			CEGE
		ESE199-3L	ENSE CORRELATION COURSE 3	-	13.5	1.0	ESE199-2L			CCESC

Total	0.0	52.0	6.0

### **PROFESSIONAL ELECTIVES : 6.0 UNITS**

	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
	CE137	FINITE ELEMENT METHOD	4.5	-	3.0	CE134P, 4th Year Standing			CEGE
	CE139	SPECIAL TOPICS IN STRUCTURAL ENGINEERING	4.5	-	3.0	CE134P, 4th Year Standing			CEGE
	CE146	URBAN HYDROLOGY AND FLOOD MANAGEMENT	4.5	-	3.0	ESE150, CE144, 4th Year Standing			CEGE
	CE157	TOTAL QUALITY MANAGEMENT (TQM/ QA- QC)	4.5	-	3.0	CE168P, 4th Year Standing			CEGE
	CE159	SPECIAL TOPICS IN CONSTRUCTION ENGINEERING & MANAGEMENT	4.5	-	3.0	CE168P, 4th Year Standing			CEGE
	CE164	GEOSYNTHETICS IN GEOTECHNICAL ENGINEERING	4.5	-	3.0	CE162P, 4th Year Standing			CEGE
	CE166	INTELLECTUAL PROPERTY RIGHTS IN ENGINEERING	4.5	-	3.0	4th year Standing			CEGE
	CE173	SPECIAL TOPICS IN TRANSPORTATION ENGINEERING	4.5	-	3.0	4th year Standing			CEGE
	ESE181	WATER RESOURCES QUALITY MANAGEMENT AND PRACTICE	4.5	-	3.0	ESE150, 4th Year Standing			CEGE
	ESE183	SOLID AND HAZARDOUS WASTE ENGINEERING	4.5	-	3.0	ESE150, 4th Year Standing			CEGE
ja Neversita Neversita	ESE187	SUSTAINABLE SANITATION	4.5	-	3.0	ESE150, 4th Year Standing			CEGE
	ESE189	AIR POLLUTION PREVENTION & CONTROL	3.0	-	2.0	ESE142P, ESE153L			CEGE
	ESE191	DESIGN OF SANITARY LANDFILL	4.5	-	3.0	ESE150, ESE151			CEGE
	CE138	BRIDGE ENGINEERING	4.5	-	3.0	CE134P, 4th Year Standing			CEGE
	CE145	WATER RESOURCES MANAGEMENT AND POLICIES	4.5	-	3.0	ESE150, CE144, 4th Year Standing			CEGE

CE147	SPECIAL TOPICS IN WATER RESOURCES ENGINEERING	4.5	-	3.0	ESE150, CE144, 4th Year Standing		CEGE
CE158	ADVANCED CONSTRUCTION METHODS	4.5	-	3.0	CE168P, 4th Year Standing		CEGE
CE163	GEOTECHNICAL EARTHQUAKE ENGINEERING	4.5	-	3.0	CE162P, 4th Year Standing		CEGE
CE165	SPECIAL TOPICS IN GEOTECHNICAL & GEO- ENVIRONMENTAL ENGINEERING	4.5	-	3.0	CE162P, 4th Year Standing		CEGE
CE171	PLANNING OF MASS TRANSPORTATION SYSTEM	4.5	-	3.0	4th year Standing		CEGE
ESE182	INDUSTRIAL AND HAZARDOUS WATER TREATMENT AND DISPOSAL	4.5	-	3.0	ESE150, 4th Year Standing		CEGE
ESE184	GROUNDWATER HYDROLOGY	4.5	-	3.0	ESE150, 4th Year Standing		CEGE
ESE188	CLIMATE CHANGE MITIGATION & ADAPTATION	4.5	-	3.0	ESE150, 4th Year Standing		CEGE
ESE190	DESIGN OF TREATMENT WETLANDS	4.5	-	3.0	ESE150, ESE125	• •	CEGE
ESE192	SOIL POLLUTION AND REMEDIATION	4.5	-	3.0	ESE150, ESE161		CEGE

Total Academic Units : 275.00

## BACHELOR OF SCIENCE IN ENVIRONMENTAL AND SANITARY ENGINEERING

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	1	DRAW10W	ENGINEERING DRAWING	-	4.5	1.0				MVA
		ENG10	ENGLISH FOR ACADEMIC PURPOSES 1	4.5	-	3.0				SLHS
		HME01	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH10-3	ALGEBRA	4.5	-	3.0				MATH
		MATH12-1	PLANE AND SPHERICAL TRIGONOMETRY	4.5	-	3.0				MATH
		NSTP1	NATIONAL SERVICE TRAINING PROGRAM 1	-	4.5	(1.5)				SOCIP
		PE11-1	PHYSICAL EDUCATION 1 (PHYSICAL FITNESS AND GROUP GAMES)	-	3.0	(2.0)				ATHLETICS
		:	Total	18.0	12.0	13.0		:	ī	:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	2	CAD10L	COMPUTER-AIDED DRAFTING	-	4.5	1.0	DRAW10W			MVA
		ENG11	ENGLISH FOR ACADEMIC PURPOSES 2	4.5	-	3.0	ENG10			SLHS
		HME02	HUMANITIES ELECTIVE	4.5	-	3.0			•	SLHS
		MATH10-4	ADVANCED ALGEBRA	4.5	-	3.0	MATH10-3			MATH
		MATH13-1	SOLID MENSURATION	3.0	-	2.0	MATH12-1	•		MATH
		RZL10	RIZAL'S WORKS & WRITINGS OF OTHER FILIPINO HEROES	4.5	-	3.0				SLHS
		NSTP2	NATIONAL SERVICE TRAINING PROGRAM 2	-	4.5	(1.5)	NSTP1			SOCIP
		PE12	PHYSICAL EDUCATION 2 (DANCE, MARTIAL ARTS AND BOARD GAMES)	-	3.0	(2.0)				ATHLETICS
		1	Total	21.0	12.0	15.0			1	1

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	3	CHM11-3	GENERAL CHEMISTRY 1	3.0	-	2.0				CHE-CHM
		CHM11-3L	GENERAL CHEMISTRY LABORATORY 1	-	4.5	1.0		CHM11-3		CHE-CHM
		FIL10	FILIPINO 1	4.5	-	3.0				SLHS
		HME03	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS

Ν	MATH21-1	CALCULUS 1	7.5	-	5.0	MATH13-1, MATH10-4		MATH
Ν	NSTP3	NATIONAL SERVICE TRAINING PROGRAM 3	-	4.5	(1.5)	NSTP2		SOCIP
P	PE13-2	PHYSICAL EDUCATION 3 (INDIVIDUAL / DUAL SPORTS)	-	3.0	(2.0)			ATHLETICS
		Total	19.5	12.0	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	4	CHM12-3	GENERAL CHEMISTRY 2	3.0	-	2.0	CHM11-3, CHM11-3L			CHE-CHM
		CHM12-3L	GENERAL CHEMISTRY LABORATORY 2	-	4.5	1.0	CHM11-3, CHM11-3L	CHM12-3		CHE-CHM
		CS10-1L	COMPUTER FUNDAMENTALS AND PROGRAMMING LABORATORY	-	9.0	2.0	MATH10-3			SOIT
		FIL11	FILIPINO 2	4.5	-	3.0				SLHS
		MATH22-1	CALCULUS 2	7.5	-	5.0	MATH21-1			MATH
		SSE01	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
		NSTP4	NATIONAL SERVICE TRAINING PROGRAM 4	-	4.5	(1.5)	NSTP3			SOCIP
		PE14	PHYSICAL EDUCATION 4 (TEAM SPORTS)	-	3.0	(2.0)				ATHLETICS
P			Total	19.5	21.0	16.0		•		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	1	BIO20	INTRODUCTION TO BIOMIMETICS ENGINEERING AND COMPONENT DESIGN	4.5	-	3.0	CHM12-3			CHE-CHM
		MATH15-1	LINEAR ALGEBRA	3.0	-	2.0	MATH13-1, MATH10- 4,2nd Year Standing			MATH
		MATH16-1L	INTRODUCTION TO SCIENTIFIC COMPUTING	-	4.5	1.0	MATH22-1, CS10-1L			MATH
		MATH23-1	CALCULUS 3	4.5	-	3.0	MATH22-1	•	•	MATH
		MATH23-1X	ENGINEERING MATHEMATICS EXIT EXAM	-	-	0.0	MATH22-1	MATH23-1		MATH
		PHY10	GENERAL PHYSICS 1	3.0	-	2.0	MATH22-1			PHYSICS
		PHY10L	GENERAL PHYSICS LABORATORY 1	-	4.5	1.0	MATH22-1	PHY10		PHYSICS
		SSE02	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
			Total	19.5	9.0	15.0	-			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	2	CE151P	BUILDING SYSTEMS ENGINEERING	4.5	4.5	4.0	CAD10L			CEGE
		MATH24-1	DIFFERENTIAL EQUATIONS	4.5	-	3.0	MATH23-1, MATH23-1X			MATH
		PHY11	GENERAL PHYSICS 2	3.0	-	2.0	PHY10, PHY10L			PHYSICS
		PHY11L	GENERAL PHYSICS LABORATORY 2	-	4.5	1.0	PHY10, PHY10L	PHY11		PHYSICS
		SSE03	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
		SSE04	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
•			Total	21.0	9.0	16.0			-	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	3	CE50P	ADVANCED ENGINEERING MATHEMATICS	4.5	4.5	4.0	MATH24-1			CEGE
		ESE150	ENVIRONMENTAL SCIENCE AND ENGINEERING	4.5	-	3.0	CHM12-3, CHM12-3L			CEGE
		MATH30-5	PROBABILITY AND STATISTICS	4.5	-	3.0	MATH23-1			MATH
		MEC30	STATICS OF RIGID BODIES	4.5	-	3.0	PHY11, PHY11L			CEGE
		PHY12	GENERAL PHYSICS 3	3.0	-	2.0	PHY11, PHY11L	•		PHYSICS
		PHY12L	GENERAL PHYSICS LABORATORY 3	-	4.5	1.0	PHY11, PHY11L	PHY12		PHYSICS
		2	Total	21.0	9.0	16.0		:	2	:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	4	CE120-0	SURVEYING 1 (ELEMENTARY & HIGHER SURVEYING)	4.5	-	3.0	DRAW10W, MATH13-1		CE120- 0F	CEGE
		CE120-0F	SURVEYING FIELD 1 (ELEMENTARY & HIGHER SURVEYING)	-	9.0	2.0	DRAW10W, MATH13-1		CE120-0	CEGE
		EE24	BASIC ELECTRICAL ENGINEERING FOR CE	4.5	-	3.0	PHY12, PHY12L, MATH24-1			EECE
		ENG12	ENGLISH FOR THE WORKPLACE 1	4.5	-	3.0	ENG11			SLHS
		MEC31-1	DYNAMICS OF RIGID BODIES	3.0	-	2.0	MEC30		•	MME
		PHY13	GENERAL PHYSICS 4	3.0	-	2.0	PHY12, PHY12L			PHYSICS

PHY13L	GENERAL PHYSICS LABORATORY 4	-	4.5	1.0	PHY12, PHY12L	PHY13	PHYSICS
PHY13X	GENERAL PHYSICS EXIT EXAM	-	-	0.0	PHY12, PHY12L	PHY13, PHY13L	PHYSICS
	Total	19.5	13.5	16.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	1	CE121	SURVEYING 2	4.5	-	3.0	CE120-0, CE120-0F		CE121F	CEGE
		CE121F	SURVEYING FIELD 2	-	9.0	2.0	CE120-0, CE120-0F		CE121	CEGE
		CE121X	SURVEYING EXIT EXAM	-	-	0.0	CE120-0, CE120-0F	CE121, CE121F		CEGE
		CE140-1P	MECHANICS OF FLUIDS	3.0	4.5	3.0	MEC31-1, PHY13, PHY13L, PHY13X			CEGE
		CE140-1PX	MECHANICS OF FLUIDS EXIT EXAM	-	-	0.0	MEC31-1, PHY13, PHY13L, PHY13X	CE140-1P		CEGE
		ESE142P	ENVIRONMENTAL AND SANITARY CHEMISTRY	3.0	4.5	3.0	ESE150			CEGE
		ESE160	ENGINEERING GEOLOGY	1.5	-	1.0	PHY13, PHY13L, PHY13X			CEGE
		MEC32	MECHANICS OF DEFORMABLE BODIES	4.5	-	3.0	MEC31-1			CEGE
		MEC32X	ENGINEERING MECHANICS EXIT EXAM	-	-	0.0	MEC31-1	MEC32		CEGE
		1	Total	16.5	18.0	15.0		I	I	1

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	2	CE131P	THEORY OF STRUCTURES 1	4.5	4.5	4.0	CE50P, MEC32, MEC32X, CE151P			CEGE
		CE141	HYDROLOGY	4.5	-	3.0	CE140-1P, CE140-1PX, MATH30-5			CEGE
		ESE141-0P	MICROBIOLOGY AND PARASITOLOGY FOR ENVIRONMENTAL AND SANITARY ENGINEERING	4.5	4.5	4.0	ESE150			CEGE

ME21	BASIC MECHANICAL ENGINEERING	4.5	-	3.0	PHY13, CE151P		MME
SFTY100	SAFETY ENGINEERING MANAGEMENT	1.5	-	1.0	3rd Year Standing		CCESC
	Total	19.5	9.0	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	3	CE142P	HYDRAULICS, SYSTEMS AND STRUCTURES	3.0	4.5	3.0	CE141, ME21, CE140-1PX, CAD10L, CE131P			CEGE
		CE161P	GEOTECHNICAL ENGINEERING 1 (SOIL MECHANICS)	4.5	4.5	4.0	CE140-1P, MEC32X, ESE160, CE140-1PX			CEGE
		ESE132	PUBLIC HEALTH ENGINEERING	4.5	-	3.0	ESE142P, ESE141-0P			CEGE
		ESE133-0	OCCUPATIONAL HEALTH AND SAFETY	3.0	-	2.0	ESE142P, ESE141-0P			CEGE
		ESE152	ECOLOGY AND ENVIRONMENTAL POLLUTION	4.5	-	3.0	ESE150, ESE141-0P, ESE142P			CEGE
			Total	19.5	9.0	15.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	4	CE143	WATER SUPPLY ENGINEERING	4.5	-	3.0	CE142P, ESE150			CEGE
		CE152P	CONSTRUCTION MATERIALS AND TESTING	3.0	4.5	3.0	CE151P, CE142P			CEGE
		CEM115-1	ENGINEERING AND FINANCIAL MANAGEMENT	4.5	-	3.0	CE151P, CE142P			CEGE
		ESE151	SOLID WASTES MANAGEMENT	3.0	-	2.0	ESE152			CEGE
		ESE161	GROUND WATER AND SOIL POLLUTION REMEDIATION	4.5	-	3.0	ESE141-0P, CE161P, ESE160, CE142P			CEGE
		ESE194	SPECIAL TOPICS IN ENVIRONMENTAL ENGINEERING	1.5	-	1.0	ESE141-0P			CEGE
			Total	21.0	4.5	15.0				

Qtr Code Title	Lec Hrs	Lab Credit Hrs Units	Prereq.	Co- requisites	Paired	Caretaker
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	ESE131P	SANITARY ENGINEERING STRUCTURES. SANITARY SCIENCE, FIRE	4.5	4.5	4.0	CE140-1P, CE140-1PX ESE133-0,		CEGE
	ESE131P	SANITARY SCIENCE, FIRE PROTECTION AND PLUMBING AS APPLIED TO BUILDING	4.5	4.5	4.0	ESE133-0, CE151P, CE143, MF21_FF24		CEGE
		BUILDING AS APPLIED TO				ME21, EE24		
8		Total	21.0	9.0	16.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	2	ESE122P	SEWAGE AND INDUSTRIAL WASTEWATER TREATMENT PROCESSES AND DESIGN	6.0	4.5	5.0	ESE141-0P, ESE142P, CE144			CEGE
		ESE122PX	SEWAGE AND INDUSTRIAL WASTEWATER TREATMENT PROCESSES AND DESIGN EXIT EXAM	-	-	0.0	ESE141-0P, ESE142P, CE144, ESE125	ESE122P		CEGE
		ESE144-0	WATER PURIFICATION PROCESSES DESIGN	6.0	-	4.0	CE143, ESE142P, ESE141-0P			CEGE
		ESE144-0X	WATER PURIFICATION PROCESSES DESIGN EXIT EXAM	-	-	0.0	CE143, ESE141-0P, ESE125, ESE142P	ESE144-0		CEGE
		ESE158	RISK AND BENEFIT ANALYSIS IN ENVIRONMENTAL AND SANITARY ENGINEERING	4.5	-	3.0	CE152P, MATH30-5, ESE125			CEGE
			PROFESSIONAL ELECTIVE	4.5	-	3.0				
		RES100-4	METHODS OF RESEARCH	3.0	-	2.0	CE144, ESE125			CEGE
-			Total	24.0	4.5	17.0				

Yr Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
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4 3	CESE195	ENGINEERING LAWS, CONTRACTS, SPECIFICATIONS AND ETHICS	4.5	-	3.0	ESE144-0, ESE144-0X, CE168P, CE50P, CE151P		CEGE
	CE40	ENGINEERING ECONOMY	4.5	-	3.0	CE50P, CE151P		CEGE
	ENG13	ENGLISH FOR THE WORKPLACE 2	4.5	-	3.0	ENG12		SLHS
	ESE153L	ENVIRONMENTAL ENGINEERING LABORATORY	-	4.5	1.0	ESE151, ESE152, ESE144-0, ESE122P		CEGE
	ESE156	ENVIRONMENTAL PLANNING, LAWS AND IMPACT ASSESSMENT	4.5	-	3.0	ESE132, ESE152, CE168P, ESE158, ESE122PX, ESE144-0X, ESE122P, ESE144-0		CEGE
	ESE156X	ENVIRONMENTAL PLANNING, LAWS AND IMPACT ASSESSMENT EXIT EXAM	-	-	0.0	ESE132, ESE152, CE168P, ESE158, ESE122P, ESE122PX, ESE144-0, ESE144-0X	ESE156	CEGE
	ESE200-1R	ENSE PRACTICUM 1	-	8.0	1.0	ESE132, ESE152, CE168P, ESE158, ESE122PX, ESE144-0X, ESE144-0		CEGE
	ESE201L	THESIS 1	-	4.5	1.0	RES100-4, ESE131P, CE161P, CE144		CEGE
	1	Total	18.0	17.0	15.0		1	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	4	ESE201-1L	THESIS 2	-	4.5	1.0	ESE201L			CEGE

	•	Total	0.0	34.0	4.0		•	•	
	ESE200-2R	ENSE PRACTICUM 2	-	16.0	2.0	ESE200-1R			CEGE
	ESE199-1L	ENSE CORRELATION COURSE 1	-	13.5	1.0	ESE200-1R			CCESC

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
5	1	ESE201-2L	THESIS 3	-	4.5	1.0	ESE201-1L			CEGE
		ESE199-2L	ENSE CORRELATION COURSE 2	-	13.5	1.0	ESE199-1L			CCESC
			Total	0.0	18.0	2.0				

### **PROFESSIONAL ELECTIVES : 3.0 UNITS**

	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
C	E137	FINITE ELEMENT METHOD	4.5	-	3.0	4th Year Standing			CEGE
C	E138	BRIDGE ENGINEERING	4.5	-	3.0	4th Year Standing			CEGE
C	E147	SPECIAL TOPICS IN WATER RESOURCES ENGINEERING	4.5	-	3.0	ESE150, CE144, 4th Year Standing			CEGE
C	E157	TOTAL QUALITY MANAGEMENT (TQM/ QA- QC)	4.5	-	3.0	CE168P, 4th Year Standing			CEGE
C	E158	ADVANCED CONSTRUCTION METHODS	4.5	-	3.0	CE144, ESE150, 4th Year Standing			CEGE
C	E159	SPECIAL TOPICS IN CONSTRUCTION ENGINEERING & MANAGEMENT	4.5	-	3.0	CE168P, 4th Year Standing			CEGE
C	E163	GEOTECHNICAL EARTHQUAKE ENGINEERING	4.5	-	3.0	CE168P, 4th Year Standing			CEGE
C	E165	SPECIAL TOPICS IN GEOTECHNICAL & GEO- ENVIRONMENTAL ENGINEERING	4.5	-	3.0	4th Year Standing			CEGE
C	E166	INTELLECTUAL PROPERTY RIGHTS IN ENGINEERING	4.5	-	3.0	4th Year Standing			CEGE
C	E171	PLANNING OF MASS TRANSPORTATION SYSTEM	4.5	-	3.0	4th Year Standing			CEGE
C	E173	SPECIAL TOPICS IN TRANSPORTATION ENGINEERING	4.5	-	3.0	4th Year Standing			CEGE
ESE181	WATER RESOURCES QUALITY MANAGEMENT AND PRACTICE	4.5	-	3.0	ESE150, 4th Year Standing			CEGE	
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ESE182	INDUSTRIAL AND HAZARDOUS WATER TREATMENT AND DISPOSAL	4.5	-	3.0	ESE150, 4th Year Standing			CEGE	
ESE183	SOLID AND HAZARDOUS WASTE ENGINEERING	4.5	-	3.0	ESE150, 4th Year Standing	•	§	CEGE	
ESE184	GROUNDWATER HYDROLOGY	4.5	-	3.0	ESE150, 4th Year Standing			CEGE	
ESE187	SUSTAINABLE SANITATION	4.5	-	3.0	ESE150, 4th Year Standing			CEGE	
ESE188	CLIMATE CHANGE MITIGATION & ADAPTATION	4.5	-	3.0	ESE150, 4th Year Standing	<b>•</b>	<b>\$</b>	CEGE	
ESE189	AIR POLLUTION PREVENTION & CONTROL	3.0	-	2.0	ESE142P			CEGE	
ESE190	DESIGN OF TREATMENT WETLANDS DESIGN OF TREATMENT WETLANDS	4.5	-	3.0	ESE150, ESE125			CEGE	
ESE191	DESIGN OF SANITARY LANDFILL	4.5	-	3.0	ESE150, ESE151		• •	CEGE	
ESE192	SOIL POLLUTION AND REMEDIATION	4.5	-	3.0	ESE150, ESE161			CEGE	

Total Academic Units : 235.00

# **BACHELOR OF SCIENCE IN GEOLOGY**

(Curriculum applicable to students who entered as freshmen beginning academic year 2015-2016)

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	1	DRAW10W	ENGINEERING DRAWING	-	4.5	1.0				MVA
		ENG10	ENGLISH FOR ACADEMIC PURPOSES 1	4.5	-	3.0			•	SLHS
		HME01	HUMANITIES ELECTIVE	4.5	-	3.0			•	SLHS
		MATH10-3	ALGEBRA	4.5	-	3.0			•	MATH
		MATH12-1	PLANE AND SPHERICAL TRIGONOMETRY	4.5	-	3.0			•	MATH
		NSTP1	NATIONAL SERVICE TRAINING PROGRAM 1	-	4.5	(1.5)				SOCIP
		PE11-1	PHYSICAL EDUCATION 1 (PHYSICAL FITNESS AND GROUP GAMES)	-	3.0	(2.0)				ATHLETICS
		:	Total	18.0	12.0	13.0		:		:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	2	CAD10L	COMPUTER-AIDED DRAFTING	-	4.5	1.0	DRAW10W			MVA
		CS10-1L	COMPUTER FUNDAMENTALS AND PROGRAMMING LABORATORY	-	9.0	2.0	MATH10-3			SOIT
		FIL10	FILIPINO 1	4.5	-	3.0				SLHS
		MATH10-4	ADVANCED ALGEBRA	4.5	-	3.0	MATH10-3			MATH
		MATH13-1	SOLID MENSURATION	3.0	-	2.0	MATH12-1			MATH
		RZL10	RIZAL'S WORKS & WRITINGS OF OTHER FILIPINO HEROES	4.5	-	3.0				SLHS
		NSTP2	NATIONAL SERVICE TRAINING PROGRAM 2	-	4.5	(1.5)	NSTP1			SOCIP
		PE12	PHYSICAL EDUCATION 2 (DANCE, MARTIAL ARTS AND BOARD GAMES)	-	3.0	(2.0)				ATHLETICS
		*	Total	16.5	21.0	14.0		,		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	3	CHM11-2	GENERAL CHEMISTRY 1	3.0	-	2.0				CHE-CHM
		CHM11-2L	GENERAL CHEMISTRY LABORATORY 1	-	4.5	1.0		CHM11-2		CHE-CHM
		ENG11	ENGLISH FOR ACADEMIC PURPOSES 2	4.5	-	3.0	ENG10			SLHS
		FIL11	FILIPINO 2	4.5	-	3.0			•	SLHS
		MATH21-1	CALCULUS 1	7.5	-	5.0	MATH13-1, MATH10-4			MATH

NSTP3	NATIONAL SERVICE TRAINING PROGRAM 3	-	4.5	(1.5)	NSTP2		SOCIP
PE13-2	PHYSICAL EDUCATION 3 (INDIVIDUAL / DUAL SPORTS)	-	3.0	(2.0)			ATHLETICS
	Total	19.5	12.0	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	4	CHM12-2	GENERAL CHEMISTRY 2	3.0	-	2.0	CHM11-2, CHM11-2L			CHE-CHM
		CHM12-2L	GENERAL CHEMISTRY LABORATORY 2	-	4.5	1.0	CHM11-2 , CHM11-2L	CHM12-2	• •	CHE-CHM
		HME02	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH22-1	CALCULUS 2	7.5	-	5.0	MATH21-1			MATH
		SSE01	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			•	SLHS
		NSTP4	NATIONAL SERVICE TRAINING PROGRAM 4	-	4.5	(1.5)	NSTP3		• •	SOCIP
		PE14	PHYSICAL EDUCATION 4 (TEAM SPORTS)	-	3.0	(2.0)			•	ATHLETICS
		1	Total	19.5	12.0	14.0		1	2	1

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	1	CHM111-1	ANALYTICAL CHEMISTRY 1	3.0	-	2.0	CHM12-2			CHE-CHM
		CHM111-1L	ANALYTICAL CHEMISTRY LABORATORY 1	-	4.5	1.0	CHM12-2, , CHM12-2L	CHM111-1	•	CHE-CHM
		GEO100	PRINCIPLES OF GEOLOGY	3.0	-	2.0	CHM12-2	•	•	CEGE
		GEO100L	PRINCIPLES OF GEOLOGY LABORATORY	-	4.5	1.0	CHM12-2	GEO100		CEGE
		MATH23-1	CALCULUS 3	4.5	-	3.0	MATH22-1	•		MATH
		MATH23-1X	ENGINEERING MATHEMATICS EXIT EXAM	-	-	0.0	MATH22-1	MATH23-1	•	MATH
		PHY10	GENERAL PHYSICS 1	3.0	-	2.0	MATH22-1			PHYSICS
		PHY10L	GENERAL PHYSICS LABORATORY 1	-	4.5	1.0	MATH22-1	PHY10		PHYSICS
		SSE02	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			•	SLHS
<u>.</u>			Total	18.0	13.5	15.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	2	GEO101P	MINERALOGY	3.0	4.5	3.0	GEO100, GEO100L			CEGE
		GEO112P	PALEONTOLOGY	3.0	4.5	3.0	GEO100, GEO100L			CEGE
		MATH15-1	LINEAR ALGEBRA	3.0	-	2.0	MATH13-1, MATH10-4, 2nd Year Standing			MATH

	LABORATORY 2	10 5	10.0	15.0	PHY10L		
PHY11I	GENERAL PHYSICS		45	10	PHY10	PHY11	PHYSICS
PHY11	GENERAL PHYSICS 2	3.0	-	2.0	PHY10, PHY10I		PHYSICS
MATH30-5	PROBABILITY AND STATISTICS	4.5	-	3.0	MATH23-1		MATH
MATH16-1L	INTRODUCTION TO SCIENTIFIC COMPUTING	-	4.5	1.0	CS10-1L, , MATH22-1		MATH

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	3	CE120-0	SURVEYING 1 (ELEMENTARY & HIGHER SURVEYING)	4.5	-	3.0	DRAW10W, MATH13-1		CE120- 0F	CEGE
		CE120-0F	SURVEYING FIELD 1 (ELEMENTARY & HIGHER SURVEYING)	-	9.0	2.0	DRAW10W, MATH13-1		CE120-0	CEGE
		GEO111P	OPTICAL MINERALOGY	3.0	4.5	3.0	GEO101P			CEGE
		GEO120	GENERAL PETROLOGY	4.5	-	3.0	GEO101P			CEGE
		GEO120L	GENERAL PETROLOGY LABORATORY	-	4.5	1.0	GEO101P	GEO120		CEGE
		PHY12	GENERAL PHYSICS 3	3.0	-	2.0	PHY11, PHY11L			PHYSICS
		PHY12L	GENERAL PHYSICS LABORATORY 3	-	4.5	1.0	PHY11, PHY11L	PHY12		PHYSICS
			Total	15.0	22.5	15.0		•		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	4	GEO106	ENGINEERING GEOLOGY	4.5	-	3.0	CHM12-2			CEGE
		GEO126	SEDIMENTOLOGY	3.0	-	2.0	GEO112P, GEO120, GEO120L		*	CEGE
		GEO126L	SEDIMENTOLOGY LABORATORY	-	4.5	1.0	GEO112P, GEO120, GEO120L	GEO126		CEGE
		GEO136	IGNEOUS AND METAMORPHIC PETROLOGY	4.5	-	3.0	GEO120, GEO120L			CEGE
		GEO136L	IGNEOUS AND METAMORPHIC PETROLOGY LABORATORY	-	4.5	1.0	GEO120, GEO120L	GEO136	•	CEGE
		HME03	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		PHY13	GENERAL PHYSICS 4	3.0	-	2.0	PHY12, PHY12L		•	PHYSICS
		PHY13L	GENERAL PHYSICS LABORATORY 4	-	4.5	1.0	PHY12, PHY12L	PHY13		PHYSICS
		PHY13X	GENERAL PHYSICS EXIT EXAM	-	-	0.0	PHY12, PHY12L	PHY13, PHY13L		PHYSICS
<u>.</u>		:	Total	19.5	13.5	16.0		1	:	:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	1	GE0125	PETROGRAPHY	1.5	-	1.0	GEO111P, GEO126, GEO136			CEGE
		GEO125L	PETROGRAPHY LABORATORY	-	4.5	1.0	GEO111P, GEO126L, GEO136L	GEO125	•	CEGE
		GEO125X	PETROLOGY EXIT EXAM	-	-	0.0		GE0125		CEGE
		GEO130	ANALYSIS OF GEOLOGIC STRUCTURES	4.5	-	3.0	GEO126, GEO126L, GEO136, GEO136L			CEGE
		GEO130L	ANALYSIS OF GEOLOGIC STRUCTURES LABORATORY	-	4.5	1.0	CE120-0, CE120-0F, GEO126, GEO126L, GEO136, GEO136L	GEO130		CEGE
		GEO132	STRATIGRAPHY	3.0	-	2.0	GEO126, GEO126L	GEO130, GEO130L		CEGE
		GEO141P	HYDROGEOLOGY	3.0	4.5	3.0		GE0132		CEGE
		GEO150	METHODS OF RESEARCH	3.0	-	2.0	MATH30-5, 3rd Year Standing		÷	CEGE
		SSE03	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			<u> </u>	SLHS
			Total	19.5	13.5	16.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	2	GEO105-1P	GEOMORPHOLOGY	3.0	4.5	3.0	GEO130, GEO130L			CEGE
		GE0142	MINERAL DEPOSIT	6.0	-	4.0	GEO130, GEO130L			CEGE
		GEO144-2	GEOLOGY OF THE PHILIPPINES & SOUTHEAST ASIA	4.5	-	3.0	GEO130, GEO130L, GEO132			CEGE
		GEO145P	COMPUTER APPLICATIONS IN GEOLOGY/GEOLOGICAL ENGINEERING	3.0	4.5	3.0	CAD10L, CS10-1L, MATH16-1L	GEO105-1P		CEGE
		GEO162	HISTORICAL GEOLOGY	3.0	-	2.0	GE0132			CEGE
		GEO162X	GENERAL GEOLOGY EXIT EXAM	-	-	0.0		GEO162		CEGE
			Total	19.5	9.0	15.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	3	GEO140	FIELD GEOLOGY LECTURE	1.5	-	1.0	GEO105-1P, GEO144-2			CEGE
		GEO140F	FIELD GEOLOGY	-	9.0	2.0	GEO105-1P, GEO144-2	GEO140		CEGE
		GEO155-1	GEOPHYSICS	4.5	-	3.0	GEO132, GEO142, PHY13, PHY13L, PHY13X			CEGE
		GEO155-1L	GEOPHYSICS LABORATORY	-	4.5	1.0	GE0132, GE0142, PHY13, PHY13L, PHY13X	GEO155-1		CEGE
		GEO157-1	GEOCHEMISTRY	4.5	-	3.0	GE0142			CEGE
		GEO163	RESOURCE GEOLOGY	6.0	-	4.0	GEO144-2			CEGE
		GEO200-0L	THESIS 1	-	4.5	1.0	GEO150	GEO140, GEO140F		CEGE
			Total	16.5	18.0	15.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	4	GEO147R	FIELD GEOLOGY 2 (OJT)	-	24.0	3.0	GEO140, GEO140F, GEO155-1, GEO157-1, GEO163			CEGE
			Total	0.0	24.0	3.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	1	ENG12	ENGLISH FOR THE WORKPLACE 1	4.5	-	3.0	ENG11			SLHS
		GEO143L	ORE MICROSCOPY LABORATORY	-	4.5	1.0	GEO111P, GEO142			CEGE
		GEO151P	ECONOMICS OF GEOLOGIC MATERIALS	3.0	4.5	3.0	GEO142, GEO163			CEGE
		GEO151X	GEOLOGICAL RESOURCE EXIT EXAM	-	-	0.0		GEO151P		CEGE
		GEO156	REMOTE SENSING AND GIS	1.5	-	1.0	GEO145P			CEGE
		GEO156L	REMOTE SENSING AND GIS LABORATORY	-	4.5	1.0	GEO145P	GEO156		CEGE
		GEO156X	ANALYTICAL METHODS AND TOOLS IN GEOLOGY EXIT EXAM	-	-	0.0		GEO156		CEGE

	Total	13.5	27.0	15.0			
GEO70	GEOLOGY/GEOLOGICAL ENGINEERING LAWS, POLICIES AND ETHICS	4.5	-	3.0	4th Year Standing		CEGE
GEO200-1L	THESIS 2	-	4.5	1.0	GEO200-0L		CEGE
GEO198-1L	CORRELATION LABORATORY 1	-	4.5	1.0	GEO105-1P, GEO162X, GEO125X		CCESC
GEO157X	APPLIED GEOLOGY EXIT EXAM	-	-	0.0		GEO157F	CEGE
GEO157F	APPLIED GEOCHEMISTRY FIELD	-	4.5	1.0	GEO106, GEO147R, GEO157-1, MATH30-5		CEGE

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	2	ENG13	ENGLISH FOR THE WORKPLACE 2	4.5	-	3.0	ENG12			SLHS
		GEO153-1	GEOLOGY/GEOLOGICAL ENGINEERING SEMINAR	4.5	-	3.0	4th Year Standing			CEGE
		GEO198-2L	CORRELATION LABORATORY 2	-	4.5	1.0	GEO125X, GEO151X, GEO156X, GEO157X, GEO70			CCESC
		GEO200-2L	THESIS 3	-	4.5	1.0	GEO200-1L			CEGE
		SSE04	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
			STS ELECTIVE	4.5	-	3.0				
			Total	18.0	9.0	14.0				

# SCIENCE, TECHNOLOGY AND SOCIETY ELECTIVES : 3.0 UNITS

Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
BIO99	SOCIAL STUDIES OF BIOSCIENCE AND BIOTECHNOLOGY	4.5	-	3.0				CHE-CHM
CHE99	ENVIRONMENTAL CONFLICTS AND SOCIAL CHANGE	4.5	-	3.0				CHE-CHM
CHM99	DEVELOPMENT AND RISE OF MODERN SCIENCE	4.5	-	3.0				CHE-CHM

Total Academic Units : 194.00

# **BACHELOR OF SCIENCE IN GEOLOGICAL SCIENCE AND ENGINEERING**

(Curriculum applicable to students who entered as freshmen beginning academic year 2015-2016)

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	1	DRAW10W	ENGINEERING DRAWING	-	4.5	1.0				MVA
		ENG10	ENGLISH FOR ACADEMIC PURPOSES 1	4.5	-	3.0				SLHS
		HME01	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH10-3	ALGEBRA	4.5	-	3.0				MATH
		MATH12-1	PLANE AND SPHERICAL TRIGONOMETRY	4.5	-	3.0				MATH
		NSTP1	NATIONAL SERVICE TRAINING PROGRAM 1	-	4.5	(1.5)				SOCIP
		PE11-1	PHYSICAL EDUCATION 1 (PHYSICAL FITNESS AND GROUP GAMES)	-	3.0	(2.0)				ATHLETICS
		1	Total	18.0	12.0	13.0			1	

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	2	CAD10L	COMPUTER-AIDED DRAFTING	-	4.5	1.0	DRAW10W			MVA
		CS10-1L	COMPUTER FUNDAMENTALS AND PROGRAMMING LABORATORY	-	9.0	2.0	MATH10-3			SOIT
		FIL10	FILIPINO 1	4.5	-	3.0			•	SLHS
		MATH10-4	ADVANCED ALGEBRA	4.5	-	3.0	MATH10-3			MATH
		MATH13-1	SOLID MENSURATION	3.0	-	2.0	MATH12-1			MATH
		RZL10	RIZAL'S WORKS & WRITINGS OF OTHER FILIPINO HEROES	4.5	-	3.0			•	SLHS
		NSTP2	NATIONAL SERVICE TRAINING PROGRAM 2	-	4.5	(1.5)	NSTP1		•	SOCIP
		PE12	PHYSICAL EDUCATION 2 (DANCE, MARTIAL ARTS AND BOARD GAMES)	-	3.0	(2.0)				ATHLETICS
L		:	Total	16.5	21.0	14.0		1	:	:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	3	CHM11-2	GENERAL CHEMISTRY 1	3.0	-	2.0				CHE-CHM
		CHM11-2L	GENERAL CHEMISTRY LABORATORY 1	-	4.5	1.0		CHM11-2		CHE-CHM
		ENG11	ENGLISH FOR ACADEMIC PURPOSES 2	4.5	-	3.0	ENG10			SLHS
		FIL11	FILIPINO 2	4.5	-	3.0				SLHS

MATH21-1	CALCULUS 1	7.5	-	5.0	MATH13-1, MATH10-4		MATH
NSTP3	NATIONAL SERVICE TRAINING PROGRAM 3	-	4.5	(1.5)	NSTP2		SOCIP
PE13-2	PHYSICAL EDUCATION 3 (INDIVIDUAL / DUAL SPORTS)	-	3.0	(2.0)			ATHLETICS
	Total	19.5	12.0	14.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
1	4	CHM12-2	GENERAL CHEMISTRY 2	3.0	-	2.0	CHM11-2, CHM11-2L			CHE-CHM
		CHM12-2L	GENERAL CHEMISTRY LABORATORY 2	-	4.5	1.0	CHM11-2, , CHM11-2L	CHM12-2		CHE-CHM
		HME02	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH22-1	CALCULUS 2	7.5	-	5.0	MATH21-1			MATH
		SSE01	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
		NSTP4	NATIONAL SERVICE TRAINING PROGRAM 4	-	4.5	(1.5)	NSTP3		•	SOCIP
		PE14	PHYSICAL EDUCATION 4 (TEAM SPORTS)	-	3.0	(2.0)				ATHLETICS
		2	Total	19.5	12.0	14.0		:	:	:

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	1	CE120-0	SURVEYING 1 (ELEMENTARY & HIGHER SURVEYING)	4.5	-	3.0	DRAW10W, MATH13-1		CE120- 0F	CEGE
		CE120-0F	SURVEYING FIELD 1 (ELEMENTARY & HIGHER SURVEYING)	-	9.0	2.0	DRAW10W, MATH13-1		CE120-0	CEGE
		GEO100	PRINCIPLES OF GEOLOGY	3.0	-	2.0	CHM12-2		• •	CEGE
		GEO100L	PRINCIPLES OF GEOLOGY LABORATORY	-	4.5	1.0	CHM12-2	GEO100		CEGE
		MATH23-1	CALCULUS 3	4.5	-	3.0	MATH22-1			MATH
		MATH23-1X	ENGINEERING MATHEMATICS EXIT EXAM	-	-	0.0	MATH22-1	MATH23-1		MATH
		PHY10	GENERAL PHYSICS 1	3.0	-	2.0	MATH22-1		•	PHYSICS
		PHY10L	GENERAL PHYSICS LABORATORY 1	-	4.5	1.0	MATH22-1	PHY10		PHYSICS
			Total	15.0	18.0	14.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	2	GEO101P	MINERALOGY	3.0	4.5	3.0	GEO100, GEO100L			CEGE
		GEO112P	PALEONTOLOGY	3.0	4.5	3.0	GEO100, GEO100L			CEGE

	Total	16.5	18.0	15.0			
PHY11L	GENERAL PHYSICS LABORATORY 2	-	4.5	1.0	PHY10, PHY10L	PHY11	PHYSICS
PHY11	GENERAL PHYSICS 2	3.0	-	2.0	PHY10, PHY10L		PHYSICS
MATH24-1	DIFFERENTIAL EQUATIONS	4.5	-	3.0	MATH23-1, MATH23-1X		MATH
MATH16-1L	INTRODUCTION TO SCIENTIFIC COMPUTING	-	4.5	1.0	MATH22-1, CS10-1L		MATH
MATH15-1	LINEAR ALGEBRA	3.0	-	2.0	MATH13-1, MATH10-4, 2nd Year Standing		MATH

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	3	GEO120	GENERAL PETROLOGY	4.5	-	3.0	GEO101P			CEGE
		GEO120L	GENERAL PETROLOGY LABORATORY	-	4.5	1.0	GEO101P	GEO120		CEGE
		MEC30	STATICS OF RIGID BODIES	4.5	-	3.0	PHY11, PHY11L			CEGE
		PHY12	GENERAL PHYSICS 3	3.0	-	2.0	PHY11, , PHY11L			PHYSICS
		PHY12L	GENERAL PHYSICS LABORATORY 3	-	4.5	1.0	PHY11, , PHY11L	PHY12		PHYSICS
		SSE02	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			•	SLHS
			STS ELECTIVE	4.5	-	3.0				CHE-CHM
			Total	21.0	9.0	16.0		·		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
2	4	GEO106	ENGINEERING GEOLOGY	4.5	-	3.0	CHM12-2			CEGE
		GEO126	SEDIMENTOLOGY	3.0	-	2.0	GEO112P, GEO120, GEO120L			CEGE
		GEO126L	SEDIMENTOLOGY LABORATORY	-	4.5	1.0	GEO112P, GEO120, GEO120L	GEO126		CEGE
		GEO136	IGNEOUS AND METAMORPHIC PETROLOGY	4.5	-	3.0	GEO120, , GEO120L		<b>0</b>	CEGE
		GEO136L	IGNEOUS AND METAMORPHIC PETROLOGY LABORATORY	-	4.5	1.0	GEO120, GEO120L	GEO136		CEGE
		MEC31-1	DYNAMICS OF RIGID BODIES	3.0	-	2.0	MEC30			MME
		PHY13	GENERAL PHYSICS 4	3.0	-	2.0	PHY12, PHY12L			PHYSICS

PHY13L	GENERAL PHYSICS LABORATORY 4	-	4.5	1.0	PHY12, , PHY12L	PHY13	PHYSICS
PHY13X	GENERAL PHYSICS EXIT EXAM	-	-	0.0	PHY12, PHY12L	PHY13, PHY13L	PHYSICS
	Total	18.0	13.5	15.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	1	CE140-1P	MECHANICS OF FLUIDS	3.0	4.5	3.0	MEC31-1, PHY12, PHY12L			CEGE
		CHM111-1	ANALYTICAL CHEMISTRY 1	3.0	-	2.0	CHM12-2			CHE-CHM
		CHM111-1L	ANALYTICAL CHEMISTRY LABORATORY 1	-	4.5	1.0	CHM12-2, CHM12-2L	CHM111-1		CHE-CHM
		GEO107-1	PRINCIPLES OF MINING	3.0	-	2.0	GEO100, GEO100L			CEGE
		GEO111P	OPTICAL MINERALOGY	3.0	4.5	3.0	GEO101P			CEGE
		GEO130	ANALYSIS OF GEOLOGIC STRUCTURES	4.5	-	3.0	GEO126, GEO126L, GEO136, GEO136L			CEGE
		GEO130L	ANALYSIS OF GEOLOGIC STRUCTURES LABORATORY	-	4.5	1.0	CE120-0, CE120-0F, GEO126, GEO126L, GEO136, GEO136L	GEO130		CEGE
			Total	16.5	18.0	15.0		•		

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	2	CE161P	GEOTECHNICAL ENGINEERING 1 (SOIL MECHANICS)	4.5	4.5	4.0	CE140-1P, , GEO106			CEGE
		GEO105-1P	GEOMORPHOLOGY	3.0	4.5	3.0	GEO130, GEO130L			CEGE
		GEO125	PETROGRAPHY	1.5	-	1.0	GEO111P, GEO126, , GEO136			CEGE
		GEO125L	PETROGRAPHY LABORATORY	-	4.5	1.0	GEO111P, GEO126L, , GEO136L	GEO125		CEGE
		GEO125X	PETROLOGY EXIT EXAM	-	-	0.0		GE0125		CEGE
		GEO132	STRATIGRAPHY	3.0	-	2.0	GEO130, GEO130L			CEGE
		HME03	HUMANITIES ELECTIVE	4.5	-	3.0				SLHS
		MATH30-5	PROBABILITY AND STATISTICS	4.5	-	3.0	MATH23-1		•	MATH
			Total	21.0	13.5	17.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	3	EE20	ELEMENTARY ELECTRICAL ENGINEERING	4.5	-	3.0	Math24-1, , Phy12, , Phy12L			EECE
		GE0144-2	GEOLOGY OF THE PHILIPPINES & SOUTHEAST ASIA	4.5	-	3.0	GEO130, , GEO130L, , GEO132			CEGE
		GEO145P	COMPUTER APPLICATIONS IN GEOLOGY/GEOLOGICAL ENGINEERING	3.0	4.5	3.0	CAD10L, CS10-1L, GEO105-1P, MATH16-1L			CEGE
		GEO149	EARTHQUAKE ENGINEERING	3.0	-	2.0	GEO130, GEO130L, CE161P			CEGE
		GEO162	HISTORICAL GEOLOGY	3.0	-	2.0	GE0132			CEGE
		GEO162X	GENERAL GEOLOGY EXIT EXAM	-	-	0.0		GEO162		CEGE
		SSE03	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0				SLHS
			Total	22.5	4.5	16.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
3	4	CE141	HYDROLOGY	4.5	-	3.0	MATH30-5			CEGE
		GEO133P	APPLICATION OF QUANTITATIVE ANALYSIS IN GEOLOGICAL ENGINEERING	3.0	4.5	3.0	GEO106, , MATH15-1, , MATH16-1L, , MATH24-1			CEGE
		GEO140	FIELD GEOLOGY LECTURE	1.5	-	1.0	GEO105-1P, GEO144-2			CEGE
		GEO140F	FIELD GEOLOGY	-	9.0	2.0	GEO105-1P, GEO144-2	GEO140		CEGE
		GEO142	MINERAL DEPOSIT	6.0	-	4.0	GEO130, GEO130L			CEGE
		GEO150	METHODS OF RESEARCH	3.0	-	2.0	MATH30- 5,3rd Year Standing			CEGE
			Total	18.0	13.5	15.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	1	GEO137P	ROCK MECHANICS	3.0	4.5	3.0	GEO133P, MEC30			CEGE
		GEO141P	HYDROGEOLOGY	3.0	4.5	3.0	GE0132			CEGE
		GEO145	CONSTRUCTION MATERIALS	1.5	-	1.0	GEO142			CEGE

	Total	18.0	13.5	15.0			
SFTY100	SAFETY ENGINEERING MANAGEMENT	1.5	-	1.0			CCESC
GEO157-1	GEOCHEMISTRY	4.5	-	3.0	GE0142		CEGE
GEO155-1L	GEOPHYSICS LABORATORY	-	4.5	1.0	GE0132, GE0142, PHY13, PHY13L, PHY13X	GE0155-1	CEGE
GEO155-1	GEOPHYSICS	4.5	-	3.0	GEO132, GEO142, PHY13, PHY13L, PHY13X		CEGE

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	2	GEO163	RESOURCE GEOLOGY	6.0	-	4.0	GE0144-2			CEGE
		GEO170	GEOTECHNICAL FOUNDATION DESIGN	1.5	-	1.0	CE141, GEO105-1P, GEO137P, GEO141P, GEO144-2, GEO149, GEO155-1			CEGE
		GEO170D	GEOTECHNICAL FOUNDATION DESIGN	-	9.0	2.0	CE141, GEO105-1P, GEO137P, GEO141P, GEO144-2, GEO149, GEO155-1	GEO170		CEGE
		GE0171	GEOLOGICAL ENGINEERING FIELD METHODS	1.5	-	1.0	CE161P, GEO105-1P, GEO137P, GEO141P, GEO144-2, GEO149, GEO155-1			CEGE
		GEO171F	GEOLOGICAL ENGINEERING FIELD METHODS	-	9.0	2.0	CE161P, GEO105-1P, GEO137P, GEO141P, GEO144-2, GEO149, GEO155-1	GE0171		CEGE
		GEO172	SITE INVESTIGATION	1.5	-	1.0	GEO105-1P, GEO137P, GEO141P, GEO144-2, GEO149, GEO155-1			CEGE

GEO172F	SITE INVESTIGATION FIELD	-	9.0	2.0	GEO105-1P, GEO137P, GEO141P, GEO144-2, GEO149, GEO155-1	GE0172	CEGE
SSE04	SOCIAL SCIENCE ELECTIVE	4.5	-	3.0			SLHS
	Total	15.0	27.0	16.0			

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	3	GEO148R	FIELD GEOLOGY 2/GEOLOGICAL ENGINEERING FIELD 2 (OJT)	-	24.0	3.0	GEO140, GEO140F, GEO155-1, GEO157-1, GEO163, GEO171, GEO171F			CEGE
			Total	0.0	24.0	3.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
4	4	ENG12	ENGLISH FOR THE WORKPLACE 1	4.5	-	3.0	ENG11			SLHS
		GEO151P	ECONOMICS OF GEOLOGIC MATERIALS	3.0	4.5	3.0	GEO142, GEO163			CEGE
		GEO151X	GEOLOGICAL RESOURCE EXIT EXAM	-	-	0.0		GEO151P		CEGE
		GEO157F	APPLIED GEOCHEMISTRY FIELD	-	4.5	1.0	GEO106, GEO148R, GEO157-1, MATH30-5			CEGE
		GEO181D	ENGINEERING PROJECT DESIGN 1	-	4.5	1.0	GEO170, GEO170D			CEGE
		GEO198-1L	CORRELATION LABORATORY 1	-	4.5	1.0	GEO105-1P, GEO162X, GEO125X			CCESC
		GEO200-0L	THESIS 1	-	4.5	1.0	GEO137P, GEO150, GEO148R			CEGE
		GEO70	GEOLOGY/GEOLOGICAL ENGINEERING LAWS, POLICIES AND ETHICS	4.5	-	3.0	4th Year Standing			CEGE
		MEC32	MECHANICS OF DEFORMABLE BODIES	4.5	-	3.0	MEC31-1			CEGE
			Total	16.5	22.5	16.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
5	1	GEO153-1	GEOLOGY/GEOLOGICAL ENGINEERING SEMINAR	4.5	-	3.0	5th Year Standing			CEGE
		GEO156	REMOTE SENSING AND GIS	1.5	-	1.0	GEO145P		•	CEGE
		GEO156L	REMOTE SENSING AND GIS LABORATORY	-	4.5	1.0	GEO145P	GEO156	•	CEGE
		GEO156X	ANALYTICAL METHODS AND TOOLS IN GEOLOGY EXIT EXAM	-	-	0.0		GEO156		CEGE
		GEO160-2	ENVIRONMENTAL GEOLOGY	4.5	-	3.0	GEO140F, , GEO149, , GEO157F			CEGE
		GEO160-2X	APPLIED GEOLOGY EXIT EXAM	-	-	0.0		GEO160-2		CEGE
		GEO180	COASTAL ENGINEERING	3.0	-	2.0	GEO141P, CE140-1P, CE141			CEGE
		GEO191	EARTH WORKS AND SLOPES	3.0	-	2.0	GEO181D			CEGE
		GEO192	CONSTRUCTION METHODS AND EQUIPMENT	3.0	-	2.0	GEO181D			CEGE
		GEO194D	ENGINEERING PROJECT DESIGN 2	-	4.5	1.0	GEO181D		ó	CEGE
		GEO200-1L	THESIS 2	-	4.5	1.0	GEO200-0L			CEGE
			Total	19.5	13.5	16.0				

Yr	Qtr	Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
5	2	BIO20	INTRODUCTION TO BIOMIMETICS ENGINEERING AND COMPONENT DESIGN	4.5	-	3.0	CHM12-2			CHE-CHM
		EMG20	ENGINEERING MANAGEMENT	4.5	-	3.0				IE-EMG
		ENG13	ENGLISH FOR THE WORKPLACE 2	4.5	-	3.0	ENG12			SLHS
		GEO146	GEOENVIRONMENTAL ENGINEERING	3.0	-	2.0	GEO133P, GEO160-2			CEGE
		GEO198-2L	CORRELATION LABORATORY 2	-	4.5	1.0	GEO125X, GEO151X, GEO156X, GEO160-2X, GEO70			CCESC
		GEO200-2L	THESIS 3	-	4.5	1.0	GEO200-1L			CEGE
		GEO40	ENGINEERING ECONOMY	4.5	-	3.0	5th Year Standing		÷	CEGE
			Total	21.0	9.0	16.0				

# SCIENCE, TECHNOLOGY AND SOCIETY ELECTIVES : 3.0 UNITS

Code	Title	Lec Hrs	Lab Hrs	Credit Units	Prereq.	Co- requisites	Paired	Caretaker
BIO99	SOCIAL STUDIES OF BIOSCIENCE AND BIOTECHNOLOGY	4.5	-	3.0				CHE-CHM
CHE99	ENVIRONMENTAL CONFLICTS AND SOCIAL CHANGE	4.5	-	3.0				CHE-CHM
CHM99	DEVELOPMENT AND RISE OF MODERN SCIENCE	4.5	-	3.0				CHE-CHM

Total Academic Units : 260.00

# SCHOOL OF CIVIL ENGINEERING, ENVIRONMENTAL AND GEOLOGICAL ENGINEERING

### CE40. ENGINEERING ECONOMY

The course provides knowledge on the principles of engineering economy and its application to the development of civil and environmental engineering projects. It introduces the concepts of time value of money, study method and use of engineering economy in project feasibility and decision making.

Credit	: 3 units
Prerequisite	: CE50P for CE
Prerequisites	: CE50P, CE151P for EnSE /CESE
Prerequisites	: CE151P for CEM

### **CE50P. ADVANCED ENGINEERING MATHEMATICS**

A course on selected topics in advanced mathematics and their applications to engineering. It covers the study of complex numbers, Laplace and inverse Laplace transforms power series, Fourier series, matrices and determinants, and vector analysis. The course also deals with programming concepts, numerical methods and techniques with application to various branches of civil engineering; formulation and programming of numerical algorithms; matrix manipulation. The course includes computer laboratory exercises.

Credit	: 4 units
Prerequisite	: MATH24-1 – for CE-EnSE-CESE

# CE119. TECHNICAL COMMUNICATION AND DOCUMENTATION

The course covers topics on effective oral and written communications as applied to civil engineering practice. The focus of the course shall be on the form and content of each technical written document used in actual CE practice and on the characteristics and practice of a good oral presentation.

Credit	: 3 units
Prerequisite	: CE155, CE195 -for CE
Prereguisite	: CE155 for CESE

# CE120-0. SURVEYING 1 (ELEMENTARY & HIGHER SURVEYING)

The course deals with fundamental surveying concepts and principles including distance measurement, leveling, area computation, subdivision, topographic and hydrographic survey; overview of the general principles of GPS and GIS and its applications.

Credit	: 3 units
Prerequisites	: MATH13-1, DRAW10W – for
	CE/EnSE/CEM /CESE/ GEO / GSE
Paired	: CE120-0F for CEGE/GSE

# CE120-OF. SURVEYING FIELD 1 (ELEMENTARY & HIGHER SURVEYING)

The course focuses on practical training and skills development in the use of surveying instruments in establishing the conditions and boundaries of land development; interpretation and construction of topographic and hydrographic maps.

Credit	: 2 units
Prerequisites	: MATH13-1, DRAW10W – for
	CE/EnSE/CEM /CESE/ GEO / GSE
Paired	: CE120-0 for CEGE/GSE

# CE120-2. SURVEYING

The course deals with surveying concepts and principles including distance measurement, leveling, area computation, subdivision, topographic and hydrographic survey; overview of the general principles of GPS and GIS and its applications.

Credit	: 2 units
Prerequisites	: MATH10-3, MATH12-1
	: MATH10-1, MATH12-5 for AR
Paired	: CE120-2F

# CE120-2F. SURVEYING FIELD

The course focuses on practical training and skills development in the use surveying instruments in establishing the conditions and boundaries of land development; interpretation and construction of topographic and hydrographic maps.

: 1 unit
: MATH10-3, MATH12-1
: MATH10-1, MATH12-5 for AR
: CE120-2

# CE121. SURVEYING 2

The course covers the fundamentals and practice of reconnaissance survey; problems on side hill works, transition from cut to fill and vice versa and mass diagram; physical problems encountered in hauling materials from an excavation to an embankment and transportation surveys.

Credit	: 3 units
Prerequisite	: CE120-0, CE120-0F for
	CE/EnSE/CEM/CESE
Paired	: CE121F for CE/EnSE/CEM/CESE

# CE121F. SURVEYING FIELD 2

The course focuses on practical training and skills development using modern surveying instruments for the observation, design and establishment of site conditions, boundaries, road and highway geometry, railway curves, road profiles, interchange design and transportation surveys. Credit : 2 units Prerequisites : CE120-0, CE120-0F for CE/EnSE/CEM/CESE Paired : CE121

### **CE121X. SURVEYING EXIT EXAM**

The exam is designed to test students' knowledge of the principles, concepts, and theories of surveying 1(elementary and higher surveying) and surveying 2(engineering surveys) and their applications. Credit : 0 Unit Prerequisite/s : CE120-0, CE120-0F Corequisite/s : CE121, CE121F

### **CE122. TRAFFIC & HIGHWAY ENGINEERING**

The course deals with planning and design of road and highway facilities and structures in the Philippines. It covers topics on geometric design of roads and highways, construction and materials, operations, administration and maintenance. It covers pavement design and analysis using relevant codes and standards. The standard specification of the Department of Public Works and Highways will also be discussed and be given emphasis.

Credit	: 3 units
Prerequisites	: CE121, CE121F, CE121X for CE
Prerequisites	: CE121, CE121F for CEM
Prerequisites	: CE121, CE121F, CE121X, CE152P for
	CESE

### **CE123. TRANSPORTATION ENGINEERING**

The course gives emphasis on urban transportation planning, design and operation using statistical and modeling techniques and computer methods. It also covers capacity and level of service of air, rail and highway. It also includes environmental impacts and mitigation, transportation policy fundamentals and case studies. Credit : 3 units Prerequisite : CE122 – for CE

#### **CE131-1. THEORY OF STRUCTURES**

The course covers the different types of structural systems, loads and its combinations and placement, applicable codes and specifications, and methods of analysis for statically determinate structures.

Credit	: 3 units
Prerequisite	: MEC32 for AR
Prerequisite	: MEC32, CE151P for CEM

# CE131P. THEORY OF STRUCTURES 1

The course covers the different types of structural systems, loads and its combinations and placement, applicable codes and specifications, and methods of analysis for statically determinate structures.

Credit	: 4units
Prerequisites	: MEC32-1, MEC32-1X, CE50P, CE151P
	for CE / CESE
Prerequisite	: MEC32, MEC32X, CE50P, CE151P for
	ENSE

### CE132P. THEORY OF STRUCTURES 2

The course covers the theory and analysis of indeterminate structures such as indeterminate beams, planar and space frames and trusses subject to static loads; method of consistent deformation; three-moment equation; slope-deflection method; moment distribution; energy methods, matrix methods; and approximate method of analysis.

Credit : 4 units Prerequisite : CE131P, CE50P for CE/CESE

### **CE132PX. THEORY OF STRUCTURES 2 EXIT EXAM**

The exam is designed to test students' knowledge of principles, theories, concepts, methods, specifications, and analysis of statically determinate structures and indeterminate structures.

Credit	: 0 Unit
Prerequisite/s	: CE131P, CE50P
Corequisite/s	: CE132P

### **CE133L COMPUTER AIDED DESIGN LABORATORY**

The course deals with the concepts, practices, standards and drafting techniques needed for basic architectural and engineering design with emphasis on the use of computer aided design software and the design of civil engineering systems and structures. Students are expected to develop proficiency and require necessary skills in computer aided design.

Credit	: 1 unit
Prerequisite	: CE151P, CAD10L

# CE133P. STRUCTURAL DESIGN 1 (REINFORCED CONCRETE)

The course deals with the design, applications and code specifications used in structural reinforced concrete members subjected to flexure (beams, girders, joists, lintels, girts, etc.), tension, and compression (columns), combined stresses (beam-columns); beam-column connections using the Plastic Limit Method or the Ultimate Strength Design (USD). Applications and specifications to buildings, bridges, and other reinforced concrete structures are given emphasis.

Credit : 5 units Prerequisites : CE132PX for CE/CESE

### CE134P. STRUCTURAL DESIGN 2 (STEEL & TIMBER)

This course deals with the behavior and design of structural steel and structural wood subject to flexure, tension, compression and combined loads; connection designs and provisions of the National Structural Code of the Philippines and other relevant codes and standards.

Credit	: 5 units
Prerequisite	: CE133P – for CE/CESE
Corequisite	: CE152P for CESE

# CE135-1. STRUCTURAL DESIGN OF REINFORCED CONCRETE

The course is concerned with the design, applications and code specifications used in structural reinforced concrete members subjected to flexure (beams, girders, joists, lintels, girts, etc.), tension, and compression (columns), combined stresses (beam-columns); beam-column connections using the Plastic Limit Method or the Ultimate Strength Design (USD). Applications and specifications as applied to buildings, and other reinforced concrete structures are given emphasis.

Credit	: 3 units
Prerequisites	: CE137-1 for AR
	: CE131-1 for CEM

### CE135X. STRUCTURAL DESIGN EXIT EXAM

The exam is designed to test students' knowledge of fundamentals of mechanics, strength of materials, and theory of structures; and the general design, principles, and analysis of the structural elements of various types of construction materials and systems. Prerequisite/s : CE135-1

#### **CE137. FINITE ELEMENT METHOD**

This is a course on the fundamentals of the finite element method (FEM). It includes the study of variational formulation, variational methods of approximation (Ritz Method, Method of Weighted Residuals), finite element analysis in one and two-dimensional problems, computer implementation and programming, and common errors in modeling finite element problems.

Credit	: 3units
Prerequisite	: CE134P, 4th Year Standing for CE, CESE
Prerequisite	: CE137-1 for CEM
Prerequisite	: 4th Year Standing for ENSE

#### CE137-1. STRUCTURAL DESIGN OF STEEL & TIMBER

This course deals with the behavior and design of structural steel and structural wood subject to flexure, tension, compression and combined loads; connection designs and provisions of the National Structural Code of the Philippines and other relevant codes and standards.

Credit	: 3 units
Prerequisite	: CE131-1 for AR
Prerequisite	: CE135-1, CE151P for CEM

### **CE138. BRIDGE ENGINEERING**

This course covers advanced topics in modern bridge design. It covers topics to respond to the need for bridges that create economic value and are durable, rapid to construct and versatile in terms of aesthetic potential.

Credit	: 3 units
Prerequisite	: CE134P, 4th Year Standing for
	CE/CESE
Prerequisite	: CE137-1 for CEM
Prerequisite	: 4th Year Standing for ENSE

# **CE139. SPECIAL TOPICS IN STRUCTURAL ENGINEERING**

This is a special course, training or workshop for students to prepare them for professional practice or specific industry demand.

Credit	: 3units				
Prerequisite	: CE134P,	4th	Year	Standing	for
	CE/CESE				
Prerequisite	: CE168P for	· CEM			

#### CE140-1P. MECHANICS OF FLUIDS

The course deals with the study of the properties of fluid and pressure intensity, static pressure, kinematics of fluid flows and fluid dynamics, hydraulic loads, flow through orifices, nozzles, venturimeters, weirs, and other flow meters, and introduction to fluid flow in pipes. It includes laboratory exercises and demonstrations related to the study of mechanics of fluids.

Credit	: 3 units
Prerequisites	: MEC31-1, PHY13, PHY13L, PHY13X
	for CE/EnSE/CESE
Prerequisites	: MEC31-1, PHY12, PHY12L
	for CEM / EE /GSE/MSE

### CE140 – 1PX. MECHANICS OF FLUIDS EXIT EXAM

The exam is designed to test students' knowledge of principles, theories, concepts of mechanics of fluids, and their applications.

Credit	: 0 Unit
Prerequisite/s	: MEC31 – 1, PHY13, PHY13L, PHY13X
Corequisite/s	: CE140 – 1P

### **CE141. HYDROLOGY**

A course designed to provide conceptual understanding of the hydrologic cycle and the different hydrological processes such as precipitation, infiltration, evaporation, transpiration, and runoff. The course also introduces groundwater flow, measurement and analysis of hydrologic data, Philippine weather and climate.

Credit	: 3 units
Prerequisite	: MATH30-5, ESE150 for CE
Prerequisite	: MATH30-5, CE140-1P, CE140-1PX for ENSE/CESE
Prerequisite	: MATH30-5 for GSE

### CE142P. HYDRAULICS, SYSTEMS AND STRUCTURES

This course deals with the hydraulic analysis and design of dams, spillways, gates and outlet works, open channels, pressure conduits, pipe network analysis, and theory of hydraulic machinery. It includes laboratory exercises and demonstrations related to hydraulics.

Credit	: 3 units
Prerequisites	: CE140-1P, CE140-1PX, ME21- for CE
Prerequisites	: CAD10L, CE131P, CE141, CE140-1PX,
	ME21 for EnSE/CESE

### **CE143. WATER SUPPLY ENGINEERING**

This course deals with the determination of the source, quality and quantity of water supply. It includes the study of the hydraulic principles, design and construction of water works systems. Emphasis is given on the operation and maintenance of water works systems and concepts of water purification systems. It also includes the protection of water supply from environmental pollution. The course also deals with the design and development of gravity irrigation projects.

Credit	: 3 units
Prerequisites	: CE142P, ESE150 for CE
Prerequisites	: CE142P, ESE132, ESE141-0P
	for CESE
Prerequisites	: CE142P. ESE152 for EnSE

### CE144. SEWERAGE & DRAINAGE ENGINEERING

The course deals with the components that make up the sewage flow from a community including storm water. Also includes the design and construction and maintenance of sewer system and study of the principles of sewage collection and disposal. The course also deals with the design, evaluation, and operation of flood control and drainage structures. It includes measurement and monitoring of flows and water levels, canal and pipeline.

Credit	: 3units
Prerequisites	: CE143, CE142P for CE
Prerequisites	: CE142P, ESE141-0P, CE143 for EnSE
Prerequisites	: CE142P, ESE141-0P, CE143, ESE151
	for CESE

### **CE145. WATER RESOURCES MANAGEMENT AND POLICIES**

The course is an introduction to the problems of water resources and water demand. The following topics are included: Characteristics of water resources systems; Reservoir design: storage terminology and critical period methods; probability matrix methods; exercises in reservoir design; reservoir operation; Water resources management and Policies in practice

Credit : 3 units Prerequisites : CE144, ESE150, 4th Year Standing for CE/CESE

# CE146. URBAN HYDROLOGY AND FLOOD MANAGEMENT

This course gives an introduction to urban hydrology. Topics include the following: optimal design of flood protection works; flood risk analyses using advanced tools like our state-of-the-art inundation modeling system; flood risk and damage assessment; Real-time flood forecasting and operational water management systems; River hydraulics and morphology; Land use and climate change studies.

Credit	: 3units
Prerequisites	: CE144, ESE150, 4th Year Standing
	for CE/CESE

# CE147. SPECIAL TOPICS IN WATER RESOURCES ENGINEERING

This is a special course, training or workshop for students to prepare them for professional practice or specific industry demand. Credit : 3 units

# Prerequisites : CE144, ESE150, 4th Year Standing for CE/EnSE/CESE

# **CE151P. BUILDING SYSTEMS ENGINEERING**

The course discusses the development cycle of a civil engineering project and the basic role of civil engineers in every stage of the process. Emphasis is given on the building parts and its construction from the foundation to the roofing, including the study of the National Building Code and other pertinent codes, and their application to building design and construction. This practical course will develop the skills required in the interpretation of building plans, design and construction through actual field observation.

Credit : 4 units Prerequisite : CAD10L for CE/EnSE/CESE/CEM

#### **CE152P. CONSTRUCTION MATERIALS AND TESTING**

The course deals with the physical properties of common construction materials primarily metals, plastics, wood, concrete, coarse and fine aggregates, asphalt and synthetic materials; examination of material properties with respect to design and use of end product, design and control of aggregates, concrete and asphalt mixtures, principle of testing; characteristics of test; properties of materials and materials testing equipment.

: 3units
: CE151P, ESE150 – for CE / CEM
: CE142P, ESE153L, CE151P for CESE
: CE142P, CE151P for EnSE

# CE155. TECHNICAL ELECTIVE 1: ESTIMATING AND VALUE ENGINEERING

The course deals with interpretation of plans and specifications, preparation of construction estimates, and cost control. Focus is on the methods of analysis, resource requirements and costs in building systems, including system components with emphasis on the procedure for preparing detailed estimate, rules on estimating, preparation of bill of quantities and bill of materials; principles of estimating as applied to various phases of project development (budget programming, feasibility, design and detailed engineering, pre-bid, contract) and fundamentals of value engineering.

Credit	: 3 units
Prerequisites	: CE134P, CE152P for CE
Prerequisites	: 4th Year Standing CE152P
	for EnSE/CESE

### CE157. TOTAL QUALITY MANAGEMENT (TQM/ QA-QC)

Overview of the total field of quality, including strategic quality management programs, quality assurance and quality control.

Credit	: 3 units
Prerequisite	: CE168P, 4th Year Standing
	for CE/ENSE / CEM/CESE

### **CE158. ADVANCED CONSTRUCTION METHODS**

This course will cover the art and science of applying engineering and construction expertise from the working task level. Actual projects will be studied in terms of specific design and construction technologies. Major topics include constructability; subcontractor and supplier management; material control; quality and productivity management; and construction facilities and site development

Credit	: 3 units
Prerequisite	: CE168P,
	4th Year Standing for CE/CESE
Prerequisites	: CE144, ESE150,
	4th Year Standing for EnSE
Prerequisite	: CE168P for CEM

# CE159. SPECIAL TOPICS IN CONSTRUCTION ENGINEERING & MANAGEMENT

This is a special course, training or workshop for students to prepare them for professional practice or specific industry demand.

Credit	: 3 units
Prerequisite	: CE168P,
	4th Year Standing for CE/EnSE/CESE
Prerequisite	: CE162P for CEM

# CE161P. GEOTECHNICAL ENGINEERING 1 (SOIL MECHANICS)

This course deals with the study of the identification and classification of soils and rocks, Site investigation and subsurface exploration, the physical and index properties of soil, compaction, water flow through soils, subsurface stress and deformation phenomena in soils, laboratory testing, and the relevance of these topics as they affect soil strength, compressibility, stability, and drainage. A thorough knowledge of engineering geology and the mechanics of deformable bodies are imperative

Credit	: 4 units
Prerequisite	: CE142P – for CE
Corequisite	: CE133P – for CE
Prerequisites	: MEC32X, CE140-1P, ESE160,
	CE140-1PX for EnSE
Prerequisite	: MEC32 for CEM
Prerequisite	: CE140-1P, GEO106 for GSE
Prerequisite	: MEC32-1, MEC32-1X, CE140-1P,
ESE160, CE140-1PX	for CESE

# CE161PX. GEOTECHNICAL ENGINEERING 1 (SOIL MECHANICS) EXIT EXAM

The exam is designed to test students' knowledge of principles, theories, concepts of soil mechanics, and their applications.

Credit	: 0 Unit
Prerequisite/s	: CE142P for CE
Prerequisite	: MEC32-1, MEC32-1X, CE140-1P,
	ESE160, CE140-1PX for CESE
Corequisite/s	: CE161P

# CE162P. GEOTECHNICAL ENGINEERING 2 (FOUNDATIONS ENGINEERING)

The practical application of geotechnical engineering principles to foundation and earth structure design and construction, foundation behaviour and selection, bearing capacity and settlement, shallow and bulkheads and cofferdams, evaluation of site exploration data, building foundation construction methods, earth dams. embankments, and concrete dam foundations, groundwater control and dewatering, soil stabilization and buried structures. The second part of this course deals with the design of reinforced concrete footings such as wall footing, square isolated footing (subject to axial load, and to axial load and bending moment), rectangular footing (isolated and combined), trapezoid footing, footing on piles, and strap footing.

Credit	: 4 units
Prerequisites	: CE161P, CE161PX for CE/CESE
Prerequisites	: CE135-1, CE161P for CEM

### CE163. GEOTECHNICAL EARTHQUAKE ENGINEERING

This course concerns plate tectonics and elastic rebound theory of earthquakes and faults; characterization of ground motions; seismicity; deterministic and probabilistic seismic hazard analyses; effects of local soil conditions on ground response; development of design ground motions; liquefaction; dynamic lateral earth pressures; seismic slope stability.

Credit	: 3 units
Prerequisite	: CE162P, 4th Year Standing for CE,
	CESE
Prerequisite	: CE168P, 4th Year Standing for EnSE
Prerequisite	: CE162P for CEM

### **CE164. GEOSYNTHETICS IN GEOTECHNICAL ENGINEERING**

This course involves the design techniques and applications for geotextiles, geosynthetics, geogrids, geonets, geomembranes and geocomposites as they are used in environmental, geotechnical, and other construction engineering projects. The course first studies natural slopes and embankments for their stability and seepage problems. The proceeding sessions deal with applications of geosynthetic construction materials to designs of those earth structures. In the recent years, geosynthetics became very practical and economical materials to be used in earth reinforcement, filtration, pond liner, landfill liner, and many other subsurface constructions and earth structures. The class reviews different types of available geosynthetic materials, those applications, and design techniques.

: 3 units
: CE162P, 4th Year Standing for CE,
: CE162P for CEM

# CE165. SPECIAL TOPICS IN GEOTECHNICAL & GEO-ENVIRONMENTAL ENGINEERING

This is a special course, training or workshop for students to prepare them for professional practice or specific industry demand.

Credit	: 3 units
Prerequisite	: CE162P,
	4th Year Standing for CE/CESE
Prerequisite	: CE162P for CEM
Prerequisite	: 4th Year Standing for EnSE

# CE166. INTELLECTUAL PROPERTY RIGHTS IN ENGINEERING

This course discusses the importance of intellectual property rights as applied to engineering and the scopes, rules, regulations and the processes in obtaining it.

Credit	: 3 units
Prerequisite	: CE195, 4th Year Standing for CE
Prerequisite	: 4th Year Standing for EnSE/CEM/CESE

# CE168P. CONSTRUCTION METHODS AND PROJECT MANAGEMENT

The course deals with construction methods, materials and equipment used to transform a particular design concept into a complete usable structure or facility and construction methodology for horizontal and vertical construction projects. This includes but not limited to construction science, construction management, and construction risk. This course will develop the skill required for a construction manager to direct, coordinate and brainstorm a wide variety of the construction projects, even the selection and hiring of contractors and finances.

Credit	: 4 units
Prerequisite	: CE152P, CE40 for CE
Prerequisite	: CE152P, CE151P for EnSE/CESE
Corequisite	: CE155, ESE131P-for EnSE
Prerequisite	: CE152P for CEM
Corequisite	: CE125 for -CESE

# CE171. PLANNING OF MASS TRANSPORTATION SYSTEM

The course details with the fundamentals of mass transportation systems planning: land, sea and air; transport demand analysis, and transportation systems operation, maintenance and management.

Credit	: 3units
Prerequisite	: CE123, 4th Year Standing for CE
Prerequisite	: 4th Year Standing for ENSE/CESE

### **CE172. TRAFFIC IMPACT ASSESSMENT**

The course covers the fundamental principles, laws and procedures involved in conducting traffic impact assessment with emphasis on the introduction of concepts of sustainable development. Credit : 3 units

Prerequisite : CE123, 4th Year Standing for CE

CE173. SPECIAL TOPICS IN TRANSPORTATION ENGINEERING

This is a special course, training or workshop for students to prepare them for professional practice or specific industry demand.

Credit	: 3 units
Prerequisite	: CE123, 4th Year Standing for CE
Prerequisite	: 4th Year Standing for ENSE/CESE

# CE181. TECHNICAL ELECTIVE 2 : ADVANCED TOPICS AND PROBLEMS IN STRUCTURAL ENGINEERING

This course involves advanced discussions on pre-stressed concrete; fundamentals of earthquake engineering and bridge design; introduction to structural design software and selected topics on matrix analysis of structures.

Credit: 3 unitsPrerequisite: CE134P for CEPrerequisite: CE134P, ESE125, 4th Year Standingfor CESE

# CE182-1L. CIVIL ENGINEERING PROJECT 1

This is a capstone course that integrates students' acquired competencies in research, systems planning, analysis and design, cost estimates, scheduling and oral and written communication. The main requirement is a practice oriented group design project in the fields of civil engineering.

Credit : 1 unit Prerequisites : CE123, CE134P, RES100-4, CE162P, CE144, ESE150, CE40

# CE182-2L. CIVIL ENGINEERING PROJECT 2

This is the continuation of CE182-1L and at the final stage of the design project study, each group is required to submit a written report and make an oral defense of their design project. Credit : 1 unit Prerequisites : CE182-1L

# CE195. CIVIL ENGINEERING LAWS, CONTRACTS, SPECIFICATIONS AND ETHICS

This course deals with the fundamentals of obligations and contracts and ethics; discussion of local and international laws related to the professional practice. Topics on the perspective of the student as future practitioners, contractors, and employers in the field of civil engineering are given emphasis; including the aspects of professional licensure and certifications.

Credit	: 3 units
Prerequisite	: RES100-4, CE133P for CE
Prerequisite	: RES100-4, CE135-1 for CEM

# CE198-1R. CE PRACTICUM 1

This capstone course involves practical field immersion of students to gain work experience under the supervision of professionals. Students will become familiar with the many phases of design, construction, operation or management under actual field conditions, which may include design, estimating, field operation, inspecting, scheduling and supervision. At the end of the immersion period, the students are required to submit a written report and make an oral presentation.

Credit : 1 unit Prerequisites : CE134P, CE162P, CE123, CE144 for CE

### CE198-2R. CE PRACTICUM 2

This is the continuation of CE198-1R. Credit : 1 unit Prerequisite : CE198-1R for CE

### CE198-3R. CE PRACTICUM 3

This is the continuation of CE198-2R. At the end of the immersion period, the students are required to submit a written report and make an oral presentation.

Credit : 1 unit Prerequisite : CE198-2R for CE

### CE200-01L. THESIS 1

This is a capstone course that integrates students acquired competencies in methods of research. The main requirement is a research study in the fields of civil engineering. Proposal defense will be the culminating activity of thesis 1.

Credit : 1 unit

Prerequisites :CE134P, RES100-4, CE162P, CE123, CE144, ESE150, CE40

#### CE200-02L THESIS 2

This is the continuation of **CE200-01L** where each group is required to present orally their final defense to a set of panel members. After the presentation, a written hardbound report which passed the plagiarism test is required.

Credit : 1 unit Prerequisite : CE200-01L

### **CEM111. MICROECONOMICS**

This course in microeconomics theory or price theory deals with the behavior of individual decision making units such as consumers, resource owners, and business firms in a free market economy. It is discussed here the different markets such as perfect competition, monopoly, oligopoly and monopolistic competition. It also covers the study of demand and supply of a commodity (goods and services) based on different variables like: taste and preference, population, product substitute, season, etc.

Credit : 3 units

Prerequisites : MATH21-1 for CEM

# **CEM112. MANAGEMENT THEORIES AND PRINCIPLES**

This course deals with the study of the different management theories and principles from the scientific management of Frederick W. Taylor to the classical management of Henri Fayol up to the modern day management thinkers. It includes the evolution of management thought from the past to the present.

Credit : 3 units : MATH23-1 for CEM Prerequisites

### **CEM114. MACROECONOMICS**

It is the study of aggregate economic behavior. The level of income of different sectors such government, households, construction, agriculture, mining, etc. is determined. It also emphasizes the factors affecting the growth and development of the economy. Credit : 3 units Prerequisite : CEM111

**CEM115-1. ENGINEERING AND FINANCIAL MANAGEMENT** 

This course deals with the managing of funds in relation to the budget in an engineering project essential for a business. It discusses how to quantify various financial resources available and plan the size and timing of expenditures, the process being associated with financial planning and financial control.

Credit	: 3 units
Prerequisite	: CE151P for CE
Prerequisites	: CE142P, CE151P, CE168P for CESE
Prerequisite	: CEM112 for CEM
Prerequisites	: CE142P, CE151P for EnSE

### **CEM116. ENTREPRENEURSHIP IN CONSTRUCTION**

This course teaches how to undertake an endeavor as an entrepreneur. It discusses how to assemble resources including innovations, finance and business acumen in an effort to transform innovations into economic goods. This may result in new organizations or may be part of revitalizing mature organizations in response to a perceived opportunity or necessity.

Credit : 3 units Prerequisite : CEM114

#### **CEM119. MARKETING MANAGEMENT IN CONSTRUCTION**

This course teaches marketing management which is a business discipline focused on the practical application of marketing techniques and the management of the firm's marketing resources and activities. It also discusses the rapidly emerging forces of globalization that have compelled firms to market beyond the borders of their home country making International Marketing highly significant and an integral part of a firm's marketing strategy. The key concepts such as product, pricing, promotion and distribution will be studied. Credit

: 3 units

#### CEM120. HUMAN **RESOURCE MANAGEMENT IN** CONSTRUCTION

This course deals with the employment of people, the development of their resources, and how to utilize, maintain and compensate their services in tune with the job and organizational requirement with the goal of helping an organization to meet strategic goals by attracting and maintaining employees and also to manage them effectively through human resource management.

Credit

This course is an introduction to contract administration with focus on privately owned projects. The course aims to familiarize the student with the types and nature of contracts for private projects, bidding practices and administration based on standard contract. Credit : 3 units Prerequisites : CE151P, CE168P for CEM

: 3 units : MATH30-5

# **CEM125. ENGINEERING LEADERSHIP**

This course discusses leadership in the construction industry – how to set agendas, identify problems, and initiate change that contributes to substantial improvement within a set of requirements and budget and to schedules of acceptable levels of risk to come up with strategic objective of an organization. The course covers the different theories of leadership and finally the different leadership styles.

Credit : 3 units Prerequisite : CE151P

# **CEM130. CONSTRUCTION SAFETY MANAGEMENT**

This course includes the study of the safety construction codes, standards and regulations, organization's construction and safety policy. This also includes safety and health information system training and program evaluation. Credit : 3 units

Prerequisite : 3rd year standing

# **CEM131. QUANTITY SURVEYING**

The course deals with interpretation of plans and specifications, preparation of construction estimates, and cost control. Focus is on the methods of analysis, resource requirements and costs in building systems, including system components with emphasis on the procedure for preparing detailed estimate, rules on estimating, preparation of bill of quantities and bill of materials; principles of estimating as applied to various phases of project development (budget programming, feasibility, design and detailed engineering, pre-bid, contract). Credit : 3 units

Prerequisite : CE151P

# CEM132. PROCUREMENT AND PURCHASING MANAGEMENT

This course deals with the procurement and purchasing management for effective construction management. This also includes the discussion on various purchasing principles such as purchasing planning, standards determination and supply selection. Credit : 3 units

Prerequisite : CEM131

# CEM182-1L. CONSTRUCTION ENGINEERING AND MANAGEMENT PROJECT 1

This is a capstone course that integrates students' acquired competencies in research, systems planning, analysis and design, cost estimates, scheduling and oral and written communication. The main requirement is a practice oriented group design project in the fields of construction engineering and management. Credit : 1 unit Prerequisites : CE137-1, RES100-4, CE162P, CE122, ESE150, CE40

# CEM182-2L. CONSTRUCTION ENGINEERING AND MANAGEMENT PROJECT 2

This is the continuation of CEM182-1P and at the final stage of the design project study, each group is required to submit a written report and make an oral defense of their construction engineering and management project. Credit : 1 unit Prerequisites : CEM182-1L

# CEM198-1R. PRACTICUM 1

This course is an out-of-campus activity course taken in three (3) terms that requires the student to complete 240 hours of on-the-job training.

Credit : 1 unit Prerequisite : CE135-1, CE162P Corequisite : CE168P

# CEM198-2R. PRACTICUM 2

This course is continuation of CEM198-1R.Credit: 1 unitPrerequisite: CEM198-1R

# CEM198-3R. PRACTICUM 3

This course is continuation of CEM198-2R.Credit: 1 unitPrerequisite: CEM198-2R

### CEM200-01L. THESIS 1

This is a capstone course that integrates students acquiredcompetencies in methods of research. The mainrequirement is a research study in the fields ofconstruction engineering and management. Proposaldefense will be the culminating activity of thesis 1.Credit: 1 unitPrerequisites:RES100-4, CE137-1, CE140-1P,CE162P, CE122, ESE150, CE40

# CEM200-02L. . THESIS 2

This is the continuation of **CEM200-01L** where each group is required to present orally their final defense to a set of panel members. After the presentation, a written hardbound report which passed the plagiarism test is required.

Credit	: 1 unit
Prerequisite	: CEM200-01L

# CESE182-1L. CIVIL, ENVIRONMENTAL AND SANITARY ENGINEERING PROJECT 1

This is a capstone course that integrates students' acquired competencies in research, systems planning, analysis and design, cost estimates, scheduling and oral and written communication. The main requirement is a practice oriented group design project in the fields of civil, environmental and sanitary engineering. Credit : 1 unit

Prerequisites : CE134P, RES100-4, CE162P, CE133P, ESE131P, ESE156

# CESE182-2L. CIVIL, ENVIRONMENTAL AND SANITARY ENGINEERING PROJECT 2

This is the continuation of CESE182-1L and at the final stage of the design project study, each group is required to submit a written report and make an oral defense of their design project.

Credit : 1 unit Prerequisites : CESE182-1L

# CESE195. ENGINEERING LAWS, CONTRACTS, SPECIFICATIONS AND ETHICS

This course deals with the fundamentals of obligations and contracts and ethics; discussion of local and international laws related to the professional practice. Topics on the perspective of the student as future practitioners, contractors, and employers in the field of civil and environmental and sanitary engineering are given emphasis; including the aspects of professional licensure and certifications.

Credit : 3 units Prerequisites :ESE144-0X, ESE144-0, CE168P, CE50P, CE151P for EnSE Prerequisite : CE133P for CESE

### CESE198-1R. CE/ENSE PRACTICUM 1

This capstone course involves practical field immersion of students to gain work experience under the supervision of professionals. Students will become familiar with the many phases of construction and/or laboratory methods testing and analysis and/or EIA under actual field. Students may go into design, laboratory works and construction. At the end of the immersion period, the students are required to submit a written report and make an oral presentation.

Credit : 2 units Prerequisites : ESE132, ESE152 CE168P, ESE158, ESE122PX, ESE144-0X, CE134P, CE144, CE155, CE162P, CE195

### CESE198-2R. CE/ENSE PRACTICUM 2

Continuation of	CESE 198-1R
Credit	: 2 units
Prerequisites	: CESE198-1R

**CESE198-3R. CE/ENSE PRACTICUM 3** Continuation of CESE 198-2R Credit : 2 units Prerequisites : CESE198-2R

### CSE200-01L THESIS 1

This is a capstone course that integrates students acquired competencies in methods of research. The main requirement is *a research study* in the fields of civil engineering. Proposal defense will be the culminating activity of thesis 1.

Credit : 1 unit

Prerequisite : RES100-14, CE133P, CE162P, CE134P, ESE131P, ESE156

### CSE200-02L THESIS 2

This is the continuation of **CSE200-01L** where each group is required to present orally their final defense to a set of panel members. After the presentation, a written hardbound report which passed the plagiarism test is required.

.Credit : 1 unit Prerequisite : CSE200-01L

# ESE122P. SEWAGE AND INDUSTRIAL WASTEWATER TREATMENT PROCESSES AND DESIGN

The course covers the theory and methods of planning and designing of sewage and industrial wastewater treatment facilities. It will include topics on design horizon setting, service area, site selection, design population, wastewater quantifications, regulatory controls and effluent limitations, characteristics of sewage and wastewater, degree of treatment, process, flow schemes and alternative comparison, equipment selection, treatment plant layout and hydraulic profiles, energy and resource requirements, costing and economics, specifications and contracts.

Credit	: 5 units
Prerequisites	: ESE141-0P, ESE142P, CE144, ESE125
	for CESE
Prerequisites	: ESE141-0P, ESE142P, CE144 for EnSE

### ESE122PX. SEWAGE AND INDUSTRIAL WASTEWATER TREATMENT PROCESSES AND DESIGN EXIT EXAM

The course covers the theory and methods of planning and designing of sewage and industrial wastewater treatment facilities. It will include topics on design horizon setting, service area, site selection, design population, wastewater quantifications, regulatory controls and effluent limitations, characteristics of sewage and wastewater, degree of treatment, process, flow schemes and alternative comparison, equipment selection, treatment plant layout and hydraulic profiles, energy and resource requirements, costing and economics, specifications and contracts.

Credit	: 0 unit
Prerequisites	: ESE141-OP, ESE142P, CE144, ESE125
	for EnSE/CESE
Corequisite	: ESE122P

# ESE125. DESIGN OF ENVIRONMENTAL AND SANITARY ENGINEERING STRUCTURES.

This course deals with the structural analysis and design of environmental and sanitary engineering systems such as reservoirs, dams, spillways, gates, open channels, piping, tanks, (underground, on-ground, elevated) and other water and wastewater containment systems.

Credit	: 2 units
Prerequisites	: CE131P, ESE152, CE142P, CE140-1P,
	CE140-1PX for CESE
Prerequisites	: CE131P, CE142P, CE140-1P, CE140-
	1PX for EnSE

# ESE131P. SANITARY SCIENCE, FIRE PROTECTION AND PLUMBING AS APPLIED TO BUILDING

The course deals with the study of engineering design of sanitary and plumbing facilities, including gas, hot and cold water supply, drainage and disposal of wastewater, and fire protection systems for different building occupancies. It also includes discussion of actual problem/case/exercises.

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: CE151P, ESE133-0, CE143, ME21
EE24 for EnSE/CESE
: CE151P, DRAW10W for CEM

# ESE132. PUBLIC HEALTH ENGINEERING

The course deals with the principles, concepts and application of environmental and sanitary engineering to the control of all the physical factors in environment that adversely affects human health. The course focuses on the identification and prevention of transmission of diseases through the control of the physical aspects of the environment including food, water, air, refuse, soil, insects and vermin, control of domestic and personal hygiene practices, and radiological health.

Credit	: 3 units
Prerequisites	: ESE141-0P, ESE142P for EnSE/CESE

### ESE133-0. OCCUPATIONAL HEALTH AND SAFETY

Application of Industrial Hygiene and Occupational Safety and Health (OSH) legislations, regulations, codes, standards and practices; the principles, processes, methodologies and strategies of Hazards Identification and Analysis, Risk Assessment and Risk Management; Accident Prevention and Hazard Control System; Action Planning and Emergency Response; Mitigation and Consequence Management; and Property and Personnel Protection Systems in the industrial occupancy and work environment. Credit : 2 units

# ESE141-0P. MICROBIOLOGY AND PARASITOLOGY FOR ENVIRONMENTAL AND SANITARY ENGINEERING

Part 1 of the course deals with an introduction in biology and biotechnology followed by an in-depth discussion on microorganisms like bacteria, virus, protozoa & fungi and their characteristics, sources, distribution, mode of transmission, roles in disease transmission; general methods of isolation & identification; application of bacteriology to public health & sanitary control of environment. Part 2 deals with the study of various parasites, their nature, occurrence and transmission; transmission of parasitic infections and their implications to environment and health; preventive and control measures for commonly encountered parasitic infections, and laboratory activities involving demonstration, exercises, and studies related to water and sewage analysis.

Credit	: 4 units
Prerequisites	: ESE142P, ESE150 for CESE
Prereguisites	: ESE150 for EnSE

# ESE142P. ENVIRONMENTAL AND SANITARY CHEMISTRY

The course focuses on the fundamentals of physical and chemical analysis of water and sewage treatment process. It also deals with the study of chemical principles of environmental pollution. With laboratory activities involving demonstration, exercises and studies related to water and sewage analysis; principles of organic and biochemistry; chemistry of environmental pollution.

Credit	: 3 units
Prerequisites	: CHM12-3 for CESE
Prerequisites	: ESE150 for EnSE

# **ESE144-0. WATER PURIFICATION PROCESSES AND DESIGN**

The course deals with the identification, determination and selection of the source, raw water quality/ influent and effluent, quality and quantity of water supply; piping principles and hydraulics, planning, design and construction of waterworks systems; collection and water treatment; operation and maintenance of waterworks system; protection of water supply systems from environmental pollution.

Credit	: 4units
Prerequisites	: CE143, ESE141-OP, ESE125, ESE142P
	for CESE
Prerequisites	: CE143, ESE142P, ESE141-0P for EnSE

# ESE144-0X. WATER PURIFICATION PROCESSES AND DESIGN EXIT EXAM

The course deals with the identification, determination and selection of the source, raw water quality/ influent and effluent, quality and quantity of water supply; piping principles and hydraulics, planning, design and construction of waterworks systems; collection and water treatment; operation and maintenance of waterworks system; protection of water supply systems from environmental pollution.

Credit	: 0 unit
Prerequisites	: CE143, ESE141-OP, ESE125, ESE142P
	for EnSE/CESE
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Corequisite : ESE144-0 ESE150. ENVIRONMENTAL SCIENCE AND ENGINEERING The course provides an understanding of the principles and concepts pertaining to ecosystems particularly on energy and tropic systems and the relationships of organisms, and biogeochemical cycles. It also provides theoretical concepts of freshwater ecology; marine ecology; estuarine ecology; and terrestrial ecology including disturbances, sources of hazards to ecosystem. This course presents an overview of general engineering and scientific solutions to alleviate the consequence of environmental degradation and attain sustainable development.

Credit : 3 units Prerequisites : CHM12-3, CHM12-3L

#### ESE151. SOLID WASTES MANAGEMENT

The course focuses on the study of the relation of solid waste to health principles; factors affecting waste generation; waste characterization and analysis; methods and administration of solid waste collection, treatment and disposal to protect the environment and public health. : 2 units Credit

Prerequisites	: ESE150, ESE141-0P, ESE142P for CESE
Prerequisites	: ESE152 for EnSE

#### ESE152. ECOLOGY AND ENVIRONMENTAL POLLUTION

The course explains the relationships between the ecology and the biosphere. Distinguish between ecology and conservation. It also deals with the ecological succession and ecosystem dynamics. Sources and effects of the physical, chemical, biological and microbiological pollutants on air, water, soil/land; sources and effects of noise pollution; sampling analysis and instrumentation of air, noise, water, soil/land pollution; sources of nuisances, irritants and eye-sores and other adverse effects to the human health; their prevention and control; standards. Cradit 

Credit	1.3 units
Prerequisites	: ESE150, ESE142P, ESE141-0P for EnSE
Prerequisites	: ESE150 for CESE

#### **ESE153L. ENVIRONMENTAL ENGINEERING LABORATORY**

This course is intended to provide the students with the hands-on experience through experiments or projects to illustrate the effects of engineering control processes on environmental or sanitation problems.

Credit	: 1 unit
Prerequisites	: ESE152, ESE151, ESE122P, ESE144-0
	for EnSE
Prerequisites	: ESE152 for CESE

# ESE156. ENVIRONMENTAL PLANNING, LAWS AND IMPACT ASSESSMENT

Fundamental principles, laws and procedures involved in the environmental planning of towns and cities with emphasis on the use of concepts of sustainable development in providing solutions to environmental problems such as pollution, flooding, blighted areas and its rehabilitation; eradication of slums; zoning and subdivision control; transportation, traffic and parking; concept and

use of environmental impact assessment; prediction of impact in air, water and land environment, in the biological and socio-economic environments; methods of analysis of laws and regulations pertinent to the administration of environmental policies and programs. Cradit · 2 · · mita

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Prerequisites	: ESE132, ESE152, CE168P, ESE158,
	ESE122P, ESE144-0, ESE122PX, ESE144-
	0X for EnSE/CESE

### ESE156X. ENVIRONMENTAL PLANNING, LAWS AND IMPACT ASSESSMENT EXIT EXAM

This course is designed to test the students' knowledge on the principles, laws and procedures involved in town and city planning with emphasis on pollution control, flooding, rehabilitation of blighted areas, eradiation of slums, zoning and subdivision control, and transportation.

Credit	: 0 unit			
Prerequisite/s	: ESE132, ESE152, CE168P, ESE158,			
	ESE122P, ESE144-0, ESE122PX,			
	ESE144-0X for EnSE/CESE			
Corequisite/s	: ESE156			

### **ESE158. RISK AND BENEFIT ANALYSIS IN** ENVIRONMENTAL AND SANITARY ENGINEERING

The course deals with the basic concepts of probability theory and statistics and their applications in planning, analysis and design of sanitary and environmental engineering systems. It discusses some statistical tools such as the Occurence modes, extreme value distribution, analysis of uncertainties, and an introduction of Bayesian statistical design theory and it's application in engineering decisión-making. The course provides understanding in the basic concepts of benefit-cost analysis and the relationship of economics and development.

Credit	: 3 units	
Prerequisites	: MATH30-5, ESE131P, CE152P	for
	CESE	
Prerequisites	: MATH30-5, ESE125, CE152P for E	nSE

### **ESE160. ENGINEERING GEOLOGY**

This course deals with the study of the application of geology to the evaluation and solution of environmental and sanitary engineering problems such as flooding, flow, slope hydrogeologic failure, liquefaction, settlements, subsidence and other natural and anthropogenic hazards.

Credit	: 1 unit				
Prerequisites	:	PHY13,	PHY13L,	PHY13X	for
	Ens	SE/CESE			

# ESE161. GROUND WATER AND SOIL POLLUTION REMEDIATION

This course focuses on fundamental understanding on the techniques of protecting and preventing contamination of soil and remediation of contaminated soil and groundwater. Credit

: 3 units

Prerequisites : CE142P, ESE141-0P, ESE160, CE161P for EnSE/CESE

# ESE181. WATER RESOURCES QUALITY MANAGEMENT AND PRACTICE

The course discusses the management of water resources quality and demand. It covers water resources systems; water resources tructures; water resources management and practice. Credit : 3 units

Prerequisites : ESE150, 4th Year Standing for CE/CEM /ENSE/CESE

# ESE182. INDUSTRIAL AND HAZARDOUS WATER TREATMENT AND DISPOSAL

This course covers a detailed discussion on the treatment and disposal of industrial and hazardous water which includes the design of sanitary structures to contain these wastes. It also discusses the sources of waste generation, waste characterization and analysis, the methods and administration, collection and disposal of industrial and hazardous waste water for the protection of the environment and public health.

Credit : 3 units Prerequisites : ESE150, 4th Year Standing for CE/ENSE/CEM/CESE

# ESE183. SOLID AND HAZARDOUS WASTE ENGINEERING

This course covers a detailed discussion on solid and hazardous waste management which includes the design of sanitary structures to contain these wastes. It also discusses the sources of waste generation, waste characterization and analysis, the methods and administration, collection and disposal of solid and hazardous waste for the protection the environment and public health.

Credit	: 3 units
Prerequisites	: ESE150, 4th Year Standing for
	CE/ENSE /CEM/CESE

### ESE184. GROUNDWATER HYDROLOGY

This course is a detailed discussion on groundwaterhydrology. It includes the discussion on the origin andoccurrence of groundwater, movement, location, anddevelopment of groundwater supplies.Credit: 3 unitsPrerequisites: ESE150, 4th Year Standing for

CE/ENSE/ CEM/CESE

ESE187. SUSTAINABLE SANITATION

This course discusses the sustainable implementation of sanitary engineering principles and practices. It involves topics on water quality for the promotion of public health. Credit : 3 units Prerequisites : ESE150, 4th Year Standing for

CE/ENSE/ CEM/CESE

### ESE188. CLIMATE CHANGE MITIGATION & ADAPTATION

This course will introduce students to key issues in the subject of climate change mitigation and adaptation. It will cover the overall framing of the problem and potential solutions, the drivers of global warming, the impacts, and the opportunities and challenges of mitigation and adaptation. This course will focus on how to address sustainable development.

Credit : 3 units

Prerequisites : ESE150, 4th Year Standing for CE/ENSE /CEM/CESE

# **ESE189. AIR POLLUTION PREVENTION & CONTROL**

This course will provide the skills required by environmental professionals to deal with local and international standards. This course will be structured to blend the technical, social, and political air quality issues into real world activities. It will provide students with information needed to carry out daily management activities in the air pollution field by enabling them to recognize key air quality issues and concerns and how to best deal with them. Students will also be grouped and ask to work as a team to submit and review at quality plan approval and permit applications.

Credit	: 2 units
Prerequisites	: ESE142P, ESE153L for CESE
Prerequisites	: ESE142P for ENSE

### **ESE190. DESIGN OF TREATMENT WETLANDS**

This course covers theoretical aspects on the use of wetlands as treatment wetlands for water quality management; natural and constructed wetlands; engineering and ecology of wetland systems; design for sustainability and for ancillary benefits.

Credit : 3 units

Prerequisite : ESE150, ESE125 for EnSE/CESE

# ESE191. DESIGN OF SANITARY LANDFILL

This course provides the introduction to the planning and design of sanitary landfills including dry and wet landfills; selection, site development plans, site layout, trench design, leachate control and treatment, gas control, runoff control, support facilities, and landfill closure issues. Credit : 3 units

Prerequisites : ESE150, ESE151 for EnSE/CESE

# **ESE192. SOIL POLLUTION AND REMEDIATION**

This course starts with soil chemistry and the behavior of contaminants in soil, i.e., speciation, transport and uptake. Also, it deals with the effects of contaminants on organisms in soil and plants; pollution phenomena like soil acidification, accumulation and leaching of contaminants in soils, and application of organic waste materials to soils. Policy aspects, soil quality criteria and standards are included together with remediation techniques.

Credit : 3 units Prerequisites : ESE150, ESE161 for EnSE/CESE

# ESE194. SPECIAL TOPICS IN ENVIRONMENTAL ENGINEERING

This subject includes Seminars, Workshops, Fieldtrips, and other activities that pertain to contemporary issues in environmental and sanitary engineering.

Credit : 1 unit Prerequisite : ESE141-OP for EnSE/CESE

#### ESE201L. THESIS 1

This is a capstone course that integrates the students acquired competencies in applied research, systems Planning, analysis and design, cost estimates, scheduling, and oral and written communications. This is the first of a series of three thesis subjects. The main requirement is an applied research study in the fields of environmental and sanitary engineering. At the final stage of the thesis each group is required to submit a written report and make an oral defense of their applied research and pass the oral defense of their research study.

Credit : 1 unit Prerequisite : RES100-4, ESE131P, CE161P, CE144

#### ESE201-1L. THESIS 2

This is the continuation of ESE201L. Each group is required to submit and present a progress report.

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Prerequisite	: ESE201L

#### ESE201-2L. THESIS 3

This is the continuation of CE201-1L and the final stage of the thesis where each group is required to submit written report and make an oral final defense of their thesis. Credit : 1 unit Prerequisite : ESE201-1L

#### ESE200-1R. ENSE PRACTICUM 1

This capstone course involves practical field immersion of students to gain work experience under the supervision of professionals. Students will become familiar with the many phases of construction and/or laboratory methods testing and analysis and/or EIA under actual field. At the end of the immersion period, the students are required to submit a written report and make an oral presentation.

Credit	: 1 unit		
Prerequisites	: ESE158,	ESE122PX,	ESE144-OX,
	ESE132, ESE	E152, CE168F	P ESE122-P,
	ESE144-0		

### ESE200-2R. ENSE PRACTICUM 2

This capstone course involves practical field immersion of students to gain work experience under the supervision of professionals. Students will become familiar with the many phases of construction and/or laboratory testing and analysis and/or EIA under actual field. At the end of the immersion period, the students are required to submit a written report and make an oral presentation. A continuation of ESE198R. Credit : 2 units Prerequisite : ESE200-1R

### **GEO40. ENGINEERING ECONOMY**

The course provides knowledge for a sound understanding of the basic aspects of engineering economy and insights into approaches that can be used for making sound economic decisions for mining and infrastructure projects. Its main emphasis will be in the concepts, theories, principles, methodology and tools for engineering economic analysis.

Credit : 3 units Prerequisites : 5<sup>th</sup> Year Standing

# GEO70. GEOLOGY/GEOLOGICAL ENGINEERING LAWS, POLICIES AND ETHICS

Principles of laws, rules, regulations and ethical standards affecting the practice of Geology and Geological Engineering, including the elements of relevant contracts Credit : 3 units Prerequisites : 4th Year Standing

#### **GEO100. PRINCIPLES OF GEOLOGY**

The course introduces the students to earth phenomena and processes. Topics include minerals, rocks, the Earth's interior, plate tectonics, earthquakes, processes on the earth's crust, landforms, geologic time, among others. The course serves as the primary building block upon which succeeding specialized and advanced courses are based. Credit : 2 units

Prerequisites : CHM12-2

# **GEO100L. PRINCIPLES OF GEOLOGY LABORATORY**

A laboratory course to accompany Principles of Geology lecture

Credit	: 1 unit
Corequisite	: GEO100
Prerequisites	: CHM12-2

#### **GEO101P. MINERALOGY**

The course offers a systematic approach in identifying and understanding the different rock and ore forming silicates as well as non-silicate minerals. Topics include crystallography and crystal optics, and on the structure, composition, properties, stability and geological occurrences of minerals. The laboratory part of the course intends to develop the essential skills and appreciation on the various techniques in using the microscope and other analytical methods necessary for studying minerals. Both lecture and laboratory parts of the course will complement each other through various conceptual and practical exposures to the basics of what minerals are.

Credit : 3 units Prerequisite : GEO100, GEO100L

#### GEO105-1P. GEOMORPHOLOGY

The course emphasizes on the dynamics of surface geology specifically changes in the landscape. It focuses on the

various controls of landform development such as lithology, erosion, deposition and past geological events. The development of landforms takes into consideration interrelationships of earth materials and the natural forces (e.g. gravity, wind, water etc.) applied to them. The study of the different geomorphic systems also looks into the influence of tectonics as well as its influence to atmosphere, hydrosphere and the biosphere which affects humans. Geomorphologic approaches to the environment and natural hazards management will also be studied.

The lecture is supplemented with field and laboratory exercises.

Credit : 3 units Prerequisites : GEO130, GEO130L

### GEO106. ENGINEERING GEOLOGY

A study of the occurrence of geological materials including their material and mass properties and their response to natural and anthropogenic processes. Application of geology to the evaluation and solution of engineering problems such as settlement, subsidence, slope failure, liquefaction, flooding and other natural and anthropogenic hazards.

Credit	: 3 units
Prerequisites	: CHM 12-2

### **GEO107-1. PRINCIPLES OF MINING**

History, importance, and characteristics of mineral industry. Principles of mineral exploration, sampling, valuing, mine development, rock fragmentation, explosives, blasting, production, utilization, and rehabilitation. Introduction to mining methods. Credit : 2 units

Prerequisites : GEO100, GEO100L

### **GEO111P. OPTICAL MINERALOGY**

An introductory course to mineral identification using transmitted light microscopy; systematic study of the optical properties of crystalline substance particularly nonopaque minerals using the polarizing microscope; topics include concept of polarized light, crystal optics, manipulation and adjustment of the polarizing microscope and optical properties of minerals, including rock-and soilforming silicates. In the end, students are expected to be able to systematically identify minerals using the properties introduced in the course. The lecture is supplemented with laboratory exercises.

Credit	: 3 units
Prereguisites	: GEO101P

### **GEO112P. PALEONTOLOGY**

A course dealing with the major groups of fossil-forming animals and plants, and trace fossils; their classification, nomenclature, morphology, ecology and stratigraphic distribution; the mechanism of organic evolution and extinction and how fossils are used to recreate past environments and to determine the history of life on earth. The lecture is supplemented with field and laboratory exercises.

Credit	: 3 units
Prerequisite	: GEO100, GEO100L

### **GEO120. GENERAL PETROLOGY**

The course looks into the distribution, mineral associations and chemical composition of rocks that compose the crust and upper mantle, and relating them to various tectonic environments. It presents the genesis, classification, textures, constituent minerals, structures and modes of occurrence of igneous, sedimentary and metamorphic rocks. The concepts of chemical equilibria and reactions, the phase rule, binary and ternary systems, the properties of minerals and methods of analyzing rocks will be the foundation of the course.

Credit : 3 units Prerequisites : GEO101P

# **GEO120L. GENERAL PETROLOGY LABORATORY**

A field or laboratory course to accompany General Petrology lecture. Field component includes studies of actual rock exposures and modes of occurrence and special projects on engineering applications.

Credit	: 1 unit
Corequisite	: GEO120
Prerequisite s	: GEO101P

#### **GEO125. PETROGRAPHY**

A course in the microscopic identification and description of the 3 types of rocks; includes an in-depth study of rock textures and structures; classification and nomenclature of rocks based on IUGS classification; British classification vs. IUGS. The course will also cover an introduction to the microscopy of man-made products such as concrete and bricks. Laboratory component includes a hands-on course on the identification of the 3 rock types using the polarizing microscope and use of computer software on rock classification and naming.

Credit : 1 unit Prerequisites : GEO111P, GEO126, GEO136

### **GEO125L. PETROGRAPHY LABORATORY**

A field or laboratory course to accompany Petrography lecture.

Credit	: 1 unit
Corequisites	: GEO125
Prerequisite	: GEO111P, GEO126L, GEO136L

#### **GEO126. SEDIMENTOLOGY**

Study of the properties, classification of clastic and carbonate sediments and sedimentary rocks. Topics include the origin/source, kinds and properties of sedimentary particles, sedimentary processes, mechanics of transport and deposition, lithification, diagenesis and the various environments of deposition. Selected sedimentation/sedimentological studies in the Philippines are discussed.

Credit	: 2 units
Prerequisites	: GEO112P, GEO120, GEO120L

#### **GEO125X. PETROLOGY EXIT EXAM**

Covers mineralogy, optical mineralogy, petrography, igneous and metamorphic petrology and sedimentology. Intended to evaluate the readiness of the students to take advance geology courses.

Credit : 0 units Corequisite/s : GEO125

### **GEO126L. SEDIMENTOLOGY LABORATORY**

A field or laboratory course which introduces the different procedures/methods useful in the study, characterization and interpretation of sediments and sedimentary rocks.

Credit	: 1 unit
Corequisite	: GEO126
Prerequisites	: GEO112P, GEO120, GEO120L

# **GEO130. ANALYSIS OF GEOLOGIC STRUCTURES**

The nature, origin and interpretation of deformation and fracture of rocks, and the application of structural methods to site-investigation and resource exploitation. Topics include geometric, kinematic and dynamic analysis; mechanical principles (stress and strain theory); geologic mapping and map interpretation; introduction to tectonics with examination of selected tectonic associations. Application of structural geology and geomechanics to design issues related to construction, natural hazards, and resource exploitation.

Credit : 3 units Prerequisites : GEO126, GEO126L. GEO136, GEO136L

# **GEO130L. ANALYSIS OF GEOLOGIC STRUCTURES** LABORATORY

A field or laboratory course to accompany Analysis of Geologic structure lecture.

Credit	: 1 unit
Corequisite	: GEO130
Prerequisites	: GEO126, GEO126L. GEO136,
	GEO136L, CE120-0, CE120-0F

### **GEO132. STRATIGRAPHY**

The study of the formation, classification, description, organization and correlation of stratified rocks as parts of the earth's crust. The different stratigraphic procedures, the various sedimentary depositional environments with the general conditions/processes and associated facies, the sedimentary basins of the Philippines and selected case studies are likewise tackled.

Credit	: 2 units
Corequisite	: GEO130, GEO130L (GEO)
Prerequisites	: GEO126, GEO126L (GEO)
	GEO130, GEO130L (GSE)

# **GEO133P. APPLICATION OF QUANTITATIVE ANALYSIS IN GEOLOGICAL ENGINEERING**

Application of analytical and numerical techniques in solving geological engineering problems. The lecture is supplemented with laboratory exercises.

Credit : 3 units Prerequisites : MATH24-1, MATH15-1, MATH16-1L, GEO106

# **GE0134. GEOLOGICAL ENGINEERING OF SOILS**

Overview of the properties and behavior of soils in different environments; suitability of soils as a construction material, and performance of a soil mass in engineering construction. Philippine case histories. : 2 units Credit Prerequisites : GEO126, GEO126L, GEO106

**GEO136. IGNEOUS AND METAMORPHIC PETROLOGY** 

Study of the classification and petrogenesis of igneous and metamorphic rocks. Emphasis is given on the recognition and interpretation of igneous and metamorphic rocks and the relation with the tectonic environments in which they formed.

Credit : 3 units Prerequisite : GEO120, GEO120L

### GEO136L. IGNEOUS AND METAMORPHIC PETROLOGY LABORATORY

A field or laboratory course to accompany Igneous and Metamorphic Petrology lecture. Focuses on the detailed megascopic and microscopic description of igneous and metamorphic rocks,

Credit : 1 unit Corequisite : GEO136 Prerequisite : GEO120, GEO120L

# **GEO137P. ROCK MECHANICS**

Physical and engineering properties of rocks, theories of roc failure and fundamentals of rock mass and rock response to loads. Principles and design of underground openings and pit slopes, ground support, tunneling, and other practical considerations. The lectures are supplemented with field and laboratory exercises.

Credit : 3 units Prerequisites : GE0133P, MEC30

### **GEO140. FIELD GEOLOGY LECTURE**

An introduction to the methods and techniques of observing geologic features, and a study of the fundamentals in geologic mapping as well as the interpretation of geologic relationships and structures. Review in the use of instruments such as plane table alidade, brunton compass, global positioning system (GPS), hand level altimeter is given preparatory to the summer field geologic practice.

Credit : 1 unit Prerequisites : GEO105-1P, GEO144-2

# GEO140F. FIELD GEOLOGY

Field course to accompany GEO140 lecture.Credit: 2 unitsCorequisite: GEO140Prerequisites: GEO105-1P, GEO144-2

### **GEO141P. HYDROGEOLOGY**

Nature and occurrences of ground and surface water systems; exploration and abstraction methods; assessment of water quality and rehabilitation of contaminated water systems. Design of wells. The lectures are supplemented with field and laboratory exercises.

Credit	: 3 units
Prerequisites	: GEO132 (GSE)
Corequisite	: GEO132 (GEO)

#### **GEO142. MINERAL DEPOSIT**

The student will learn the different types of mineral deposits, with special emphasis, but not limited to, types of deposits occurring in the Philippines. The first part will cover a brief introduction on the economics of mineral resources and a review of basic geologic principles relevant to the formation of ore deposits. The course objective is to familiarize the students with the different ore forming processes and learn useful guides in recognizing deposit types and other basic knowledge that any aspiring exploration geologist should have. Typical examples are given as simple case histories of ore deposits that were developed into successful mines. The lectures are supplemented with laboratory exercises. Credit : 4 units

Prerequisites : GEO130, GEO130L

### **GEO143L. ORE MICROSCOPY LABORATORY**

Hands-on course in the identification of common ore minerals using incident light microscopy; includes a study of selected ore types in the Philippines & elsewhere emphasizing ore textures and paragenesis and case studies on world-class deposits particularly on ore assemblages, newly discovered textures, mineral phases and alterations.

Credit	: 1 unit
Prerequisites	: GEO111P, GEO142

### GEO144-2. GEOLOGY OF THE PHILIPPINES & SOUTHEAST ASIA

Study of the geology of the Philippines and Southeast Asia. General discussion on the regions' stratigraphy, structures, tectonic setting and geodynamic processes. Presentation of models of the geologic, tectonic and geodynamic evolution of the region and update on developments from recent research.

Credit : 3 units

Prerequisites : GEO130, GEO130L, GEO132

#### **GE0145. CONSTRUCTION MATERIALS**

Nature, occurrences, of all natural construction materials. The course also covers the discussion on the exploration, evaluation, extraction, processing, quality control and marketing of all construction materials. Credit : 1 unit Prerequisites : GEO142

# GEO145P. COMPUTER APPLICATIONS IN GEOLOGY/GEOLOGICAL ENGINEERING

The students are introduced to the applications of geological software. The use of general purpose computer programs to geological applications is also covered. Geological data sourcing, evaluation and management is an integral part of the course. Hands-on exercises on the use of selected software, both specialized and general purpose, to solve simulated geological problems form the bulk of this course.

Credit	: 3 units
Corequisite	: GEO105-1P (GEO)
Prerequisites	: CS10-1L, GEO105-1P (GSE), CAD10L,
	MATH 16-1L

#### **GEO146. GEOENVIRONMENTAL ENGINEERING**

Transport of contaminants including advection, dispersion, sorption and transformation. Fate modeling using available computer software. Credit : 2 units

Prerequisites : GEO133P, GE0160-2

### GEO147R. FIELD GEOLOGY 2 (OJT)

An on-the-job training course (OJT) for BS Geology students, which is taken either in a government agency or in the industry. It is intended to expose the students to geology-related work. Activities include field and laboratory works as well as researches where concepts learned in prior geology courses are applied. At the end of the training, the student should submit a report of the activities undertaken together with proofs of accomplished tasks required by the host institution.

Credit : 3 units

Prerequisites : GEO140, GEO140F, GEO163, GEO155-1, GEO157-1

# GEO148R. FIELD GEOLOGY 2/GEOLOGICAL ENGINEERING FIELD 2 (OJT)

An on-the-job training course (OJT) for BS GSE students to be taken, either in a government agency or in the industry. It is intended to expose the students to geology-related work. Activities include field and laboratory works as well as researches where concepts learned in prior geology courses are applied. At the end of the training, the student should submit a report of the activities undertaken together with proofs of accomplished tasks required by the host institution.

Credit	: 3 units
Prerequisites	: GEO140, GEO140F, GEO163,
	GEO155-1, GEO157-1,
	GEO171, GEO171F

#### **GEO149. EARTHQUAKE ENGINEERING**

An introduction to the effects of seismic events on the built environment and a practical understanding of how structural design can accommodate seismic loadings. The topics covers causative mechanism of earthquake, earthquake magnitudes, ground motion. Effect of local soil and rock conditions on motions, liquefaction analysis. Analysis and design of slopes, embankments, foundations and earth retaining structures for seismic loading. Philippine case histories.

Credit : 2 units Prerequisites : GEO130, GEO130L, CE161P

#### **GEO150. METHODS OF RESEARCH**

Nature and characteristics of research, the general approach to research studies, and processes and methodologies of research as applied to engineering; elements of technical writing as applied to the preparation of reports, proposals and theses; writing of a research proposal.

Credit : 2 units Prerequisites : MATH30-5, 3<sup>rd</sup> year standing

#### **GEO151P. ECONOMICS OF GEOLOGIC MATERIALS**

Cost, risk, and return characteristics of mineral exploration; introduction to economic evaluation; cash flow and time value concepts; discounted cash flow methods; mining taxation considerations; sensitivity and risk analysis techniques; exploration economics and strategies; evaluation of exploration projects; exploration planning issues; sampling and ore reserve estimation. The lectures are supplemented with laboratory exercises. Credit : 3 units

Prerequisites : GEO142, GEO163

#### **GEO151X. GEOLOGIC RESOURCE EXIT EXAM**

Covers resource geology, mineral deposits and economics of geologic materials. Intended to evaluate the readiness of the students to take advance geology courses.

Credit : 0 units Corequisite : GEO151P

# GEO153-1. GEOLOGY/GEOLOGICAL ENGINEERING SEMINAR

The course is intended to expose the students to current developments in geology/geological engineering through attendance to various seminars/conferences. This is supplemented with readings and discussions on current researches in geology and geological engineering. Graduate students can also be invited to present technical papers based on thesis research. Student groups are responsible for chairing the external speakers. The course also deals with ways by which the delivery of oral presentation could be improved.

Credit : 3 units Prerequisites : 4<sup>th</sup> Year Standing (GEO)

: 5<sup>th</sup> Year Standing (GSE)

# **GEO155-1. GEOPHYSICS**

The application of physical principles in the examination and characterization of the Earth. The Earth's physical properties and dynamic processes will be assessed and evaluated by integrating topics such as gravity, seismology, resistivity, magnetism, geochronology, and heat flow, as related to scientific and engineering problems. Techniques of geophysics applied to resource exploration, site investigation and engineering problems. Physical principles, instrumentation, field procedures, data interpretation, and design of field programs are covered for each geophysical method. Credit : 3 units Prerequisites : GEO132, GEO142,

PHY13, PHY13L, PHY13X

### **GEO155-1L. GEOPHYSICS LABORATORY**

A laboratory course to accompany Geophysics lecture. Credit : 1 unit Corequisite : GEO155-1 Prerequisites : GEO132, GEO142, PHY13, PHY13L, PHY13X

### **GEO156. REMOTE SENSING AND GIS**

Overview of space and airborne sensors, primary data methods, acquisition image processing, image enhancement, visualization, interpretation and image enhancement, visualization, interpretation and image analysis, image classification and image fusion combined with spatial data input, spatial data structures (vectors, (graphics raster), data management attribute), visualization and query of spatial data, spatial analysis aspects of data quality.

Credit : 1 unit Prerequisites : GEO145P

#### **GEO156L. REMOTE SENSING AND GIS LABORATORY**

A laboratory course to accompany Remote Sensing and GIS lecture.

Credit	: 1 unit
Corequisite	: GEO156
Prerequisite	: GEO145P

# GEO156X. ANALYTICAL METHODS AND TOOLS IN GEOLOGY EXIT EXAM

The examination includes remote sensing and GIS, geostatistics and computer applications in geology. Intended to evaluate the readiness of the students to take advance geology course.

Credit : 0 units Corequisite : GEO156

### **GEO157F. APPLIED GEOCHEMISTRY FIELD**

A course on the application of geochemical techniques and principles in solving geological and environmental problems and in the exploration for mineral deposits. Different geochemical prospecting techniques/methods under various geologic conditions applicable locally will be covered in the study. Classification of anomaly and correlation of elements using basic statistical analysis. Credit : 1 unit Prerequisites : GEO157-1, GEO147R (GEO), GEO106,

GEO148R (GSE), MATH30-5

# GEO157X. APPLIED GEOLOGY EXIT EXAM

Covers applied geology courses such as geochemistry, geophysics, hydrogeology, applied geochemistry, applied geophysics and environmental geology. Intended to evaluate the readiness of the students to take advance geology courses.

Credit : 0 units Corequisite : GEO157F

# GEO157-1. GEOCHEMISTRY

The course looks into the fundamentals of the different chemical and physical concepts applied to various geological processes. Included are topics on the origin, distribution and geochemical behavior of elements, the chemical evolution of the earth, geochemistry of natural waters and sedimentary rocks, isotope geochemistry, crystal chemistry, trace element geochemistry and organic geochemistry. Also studied are the details of chemical thermodynamics, phase rule chemistry, equilibrium reactions and reaction kinetics as applied to geology. The also cover the application of geochemical techniques and principles in solving geological and environmental problems and in the exploration for mineral deposits. Different geochemical prospecting techniques/ methods under various geologic conditions applicable locally will be covered in the study.

Credit : 3 units Prerequisites : GEO142

# **GEO160-2. ENVIRONMENTAL GEOLOGY**

A comprehensive study on human interaction with his ever-changing geological environment. The course is focused on environmental impacts resulting from population and land-use expansion, our increased consumption of resources such as water, energy, and minerals and on geologic hazards. A proactive philosophy is promoted and includes the assessment of public perception and response to geological risks. The lectures are supplemented with laboratory and field exercises Credit : 3 units

Prerequisite : GEO149, GEO140F, GEO157F

# GEO160-2X. APPLIED GEOLOGY EXIT EXAM

Covers applied geology courses such as geochemistry, geophysics, hydrogeology, applied geochemistry and environmental geology. Intended to evaluate the readiness of the students to take advance geology courses. Credit : 0 units Corequisite/s : GEO160-2

# **GEO162. HISTORICAL GEOLOGY**

A study of the structure and evolution of the earth, its atmosphere and its environment from its origins to its present-day forms. New concepts and recent developments on the subject matter are likewise studied. Credit : 2 units Prerequisites : GEO132

# GEO162X. GENERAL GEOLOGY EXIT EXAM

Covers principles of geology, geomorphology, paleontology, stratigraphy, historical geology, analysis of geologic structures and Geology of Southeast Asia. Intended to evaluate the readiness of the students to take advance geology courses.

Credit : 0 units

Corequisite/s : GEO162

# GEO163. RESOURCE GEOLOGY

Study of the various mineral and energy resources. Soil and water resources are likewise tackled. Topics for discussion include the formation, distribution, extraction and uses of these resources including the political and socio-economic consequences of resource discovery, resource depletion as well as the environmental impact of extraction.

Credit	: 4 units
Prerequisites	: GEO144-2

### **GEO170. GEOTECHNICAL FOUNDATION DESIGN**

A study of different methods of foundation and slope design including distribution of vertical and lateral stress, design of retaining walls, anchors and piles, slope stability, soil/rock bearing capacities. Design applications in specific areas in the Philippines.

Credit : 1 unit Prerequisites : GEO105-1P, GEO137P, GEO141P, GEO144-2, GEO149, GEO155-1, CE141

# **GEO170D. GEOTECHNICAL FOUNDATION DESIGN**

A field course f	or GEO170.
Credit	: 2 units
Corequisites	: GEO170
Prerequisites	: GEO105-1P, GEO137P, GEO141P,
	GEO144-2, GEO149, GEO155-1, CE141

### GEO171. GEOLOGICAL ENGINEERING FIELD METHODS

Methods of geological engineering site investigation, qualitative and quantitative assessment of the properties and behavior of earth materials and their structures. Students will be required to conduct a field investigation in areas where there are engineering geological problems. Results of such investigation will be submitted in written form together with engineering geological maps and sections.

Credit : 1 unit Prerequisites : CE161P, GEO105-1P, GEO137P, GEO141P, GEO144-2, GEO149, GEO155-1
# **GEO171F. GEOLOGICAL ENGINEERING FIELD METHODS**

A field course to accompany Geological Engineering Field methods lecture. Credit : 2 units

Credit : 2 Units Corequisite : GEO171 Prerequisites : CE161P, GEO105-1P, GEO137P, GEO141P, GEO144-2, GEO149, GEO155-1

#### **GEO172. SITE INVESTIGATION**

Principles and techniques in characterizing earth materials (soil and rock) for engineering projects in various environments with emphasis on interdisciplinary approach to field exploration and site investigation through soil and rock mechanics theory, geologic and geotechnical correlations, geophysical and remote sensing techniques, and in-situ testing and sampling. Use of results of site investigation in preliminary geotechnical design. Credit : 1 unit

Prerequisites : GEO105-1P, GEO137P, GEO141P,

GEO144-2, GEO149, GEO155-1

## GEO172F. SITE INVESTIGATION FIELD

A field and laboratory course for GEO172

. 2 units
: GEO172
: GEO105-1P, GEO137P, GEO141P,
GEO144-2, GEO149, GEO155-1

#### **GEO180. COASTAL ENGINEERING**

This course covers coastal processes, basic wave and water level measurements; water record analyzes and storm surges. Included in the course are the following topics: design of offshore structures, use of hydraulic and numerical coastal models, environmental considerations, coastal zone management, coastal sediment transport and design in the coastal zone. The students will be required to prepare a project on the design of breakwater based on the hydraulic model. Testing with the hydraulic model to determine breakwater stability is also treated.

Credit	: 2 units
Prerequisites	: GEO141P, CE140-1P, CE141

#### **GEO181D. ENGINEERING PROJECT DESIGN 1**

Student groups will be required to prepare a feasibility study for a major geological engineering project., Proposals should conform to government regulations (i.e. consideration of safety, reliability, aesthetics, ethics and social and environmental impact) and should include cost analyzes and time lines. The feasibility study should be presented to a panel which is composed of faculty members and external evaluators. Assessment will be based on the technical presentation and content of the feasibility study.

Credit : 1 unit Prerequisites : GEO17

: GEO170, GEO170D

## GEO191. EARTH WORKS AND SLOPES.

Design of open and underground excavation, acceptability of materials for embankment construction, use of fills. Improvement of unacceptable materials, stability of natural and constructed slopes, methods of slope stability analysis, numerical modeling techniques applied to earthworks and slopes, monitoring of slopes, practical methods of improving slope stability.

Credit : 2 units Prerequisites : GEO181D

#### **GEO192. CONSTRUCTION METHODS AND EQUIPMENT**

Description and application of different construction methods and excavation equipment. Their merits and performance, tunneling systems, dams, and other superstructures. Assessment of different construction methods and appropriate equipment: ripping, cutting, and drilling. Practical applications to foundations, highways, airfields, pipe lines, dams, etc.

Credit : 2 units Prerequisites : GEO181D

#### **GEO194D. ENGINEERING PROJECT DESIGN 2**

Continuation of	GEO181D
Credit	: 1 unit
Prerequisites	: GEO181D

#### **GEO198-1L. CORRELATION LABORATORY 1**

Recapitulation and synthesis of the various subjects of geology. A course conducted to prepare the students for the professional licensure examinations. Topics covered fall under General Geology and Petrology which are Day 1 and Day 2 subjects of the board examination, respectively. Credit : 1 unit Prerequisites : GEO105-1P, GEO162X, GEO125X

#### **GEO198-2L. CORRELATION LABORATORY 2**

Tackles topics covered under Applied Geology, the Day 3 board exam subject.

Credit	: 1 unit
Prerequisites	: GEO125X, GEO156X, GEO151X,
	GEO157X, GEO70 for GEO
Prerequisites	: GEO156X, GEO151X, GEO70, GEO160-
	2X, GEO125X for GSE

# GEO200-0L. THESIS 1

Identification and proposal of a research project. Review of the writing requirements, content and structure of a thesis proposal. The actual preparation and oral defense of a research proposal comprise the bulk of the course work.

Credit	: 1 unit
Prerequisites	: GEO150 for GEO
	: GEO137P, GEO150, GEO148R for GSE
Co-requisites	:GEO140, GEO140F for GEO

GEO200-1L. THESIS 2

Execution of the research plan developed in GEO 200-OL. The parts and format of a thesis, as well as the style in writing each part are discussed. Credit : 1 unit Prerequisites : GEO200-OL

# GEO200-2L. THESIS 3

Continuation of the research activities undertaken in GEO 200-1L. An oral thesis defense and the submission of the final thesis draft are the major requirements of the course. Credit : 1 unit Prerequisites : GEO200-1L and stress-strain relationships. The course culminates with example of applications and specifications as applied to structural elements like beams and trusses.

Credit : 5 units Prerequisites : MEC31-1 for CE/CESE

## MEC32 – 1X. MECHANICS OF DEFORMABLE BODIES EXIT EXAM

The exam is designed to test students' knowledge of the principles, concepts, theories of statics and dynamics of rigid bodies and mechanics of deformable bodies, and their applications.

Credit	: 0 Unit
Prerequisite/s	: MEC31 – 1
Corequisite/s	: MEC32 – 1

# MEC30. STATICS OF RIGID BODIES

This course covers the branch of engineering mechanics known as statics which deals with the forces acting on non-moving bodies. The course is in preparation for a higher level of analysis of assemblies and structures. It covers concurrent and non-concurrent forces, operation with the free body concept, equilibrium of co-planar and non-coplanar force system, analysis of trusses, friction force in space, centroids and moments of inertia.

Credit	: 3 units
Prerequisites	: PHY11, PHY11L or PHY11-2, PHY11-2L
for	
	CE/EnSE/CEM/CESE/EE/MME/SEM
Prerequisites	: MATH22-2, PHY 11-2, PHY11-2L for AR

#### **MEC32. MECHANICS OF DEFORMABLE BODIES**

The course deals with the study of strength of materials where the understanding of how bodies and materials respond to applied loads is the main emphasis. The course covers the fundamental concepts of stresses and strains experienced and/or developed by different materials in their loaded state and subjected to different conditions of constraint that includes axial stress, shearing stress, bearing stress, torsion, flexural stress, and stress-strain relationships.

Credit	: 3 units
Prerequisites	: MEC31-1 for EnSE, CEM, IE, COE, EE
GSE	
Prerequisites	: MEC31 for ME ; MEC30 for AR/MSE

#### **MEC32-1. MECHANICS OF DEFORMABLE BODIES**

The course deals with the study of strength of materials where the understanding of how bodies and materials respond to applied loads is the main emphasis. The course covers the fundamental concepts of stresses and strains experienced and/or developed by different materials in their loaded state and subjected to different conditions of constraint that includes axial stress, shearing stress, bearing stress, torsion, flexural stress, combined stress,

#### **RES100-4. METHODS OF RESEARCH**

This course consists of two parts. The first part deals with the ideas, concepts, and principles of research methodology, the problem, the major research methods, preparation of the research instruments, review of related literature and studies, sampling and guidelines in the selection of statistics to be used. The second part deals with the thesis writing chapter by chapter. The analysis, presentation, and interpretation of data are especially given due emphasis.

Credits	: 2 units
Prerequisites	: MATH30-5, 4 <sup>th</sup> Year Standing for CE
Prerequisites	: CE144, ESE125, for EnSE
Prerequisites	: MATH30-5 for CEM
Prerequisites	: ENG13, ESE141-0P for CESE