



Degree and Study Plan

College: Agricultural & Marine Sciences
Department: Soils, Water and Agricultural Engineering
Cohorts: 2010 - 2013
Degree: Bachelor of Science
Major: Water Technology

<u>Summary of Credits:</u>	
University Requirements (UR)	6
Arabic	3
Contemporary Omani Society	1
Oman & Islamic Civilization or Islamic Culture	2
University Electives (UE)	6
See List A	
College Requirements (CR)	29
See list B	
College Electives (CE)	9
See list C	
Departmental Requirements (DR)	
See list D	
Departmental Electives	
See list E	
Major Requirements (AR)	55
See list F	
Major Electives (AE)	21
See list G	
Specialization Requirements (SR)	
See list H	
Specialization Electives (SE)	
See list I	
Minor Requirements (IR)	3
See list J	
Minor Electives (IE)	15
See list K	
TOTAL	126

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HoD: **Dr. Hayder Abdel Rahman** Date:

Dean's Office: **Prof. Anvar Kacimov** Date:

Admission and Registration: Date:

DEPARTMENT OF SOIL, WATER AND AGRICULTURAL ENGINEERING

WATER TECHNOLOGY

Study Plan: for Cohort 2010-2013

Sem.	Course Code	Course Title	Cr.	Pre-req./Co-req.*	Cat.
ONE FALL		Foundation Program	0		UR
	TOTAL		0		

TWO SPRING	ARAB1001	Arabic	3		UR
	CAMS2000	Intro. CAMS	0		CR
	CAMS2003	Intro. to Food & Resource Economics	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	CR
	CHEM2101	General Chemistry I	4	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604), FPMT(0105 or 0109)	CR
	LANC2140	English for CAMS I	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	CR
		University Elective	2		UE
TOTAL		15			

THREE FALL	HIST1010	Oman & Islamic Civilization	2	=ISLM1010	UR
	LANC2141	English for CAMS II	3	LANC(2140 or 2142)	CR
	PHYS2101	General Physics I	4	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604), FPMT(0105 or 0109)	CR
		University Elective	2		UE
		University Elective	2		UE
	SWAE2201	Introduction to Soil & Water	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	CE
TOTAL		16			

FOUR SPRING	SOCY1001	Contemporary Omani Society	1	= SOCI3320	UR
	BIOL2101	General Biology I	4	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	CR
	CAMS3000	Seminar & Presentation Skills	2	CAMS2000, FPCS(0101 or 0102), FPMT(0105 or 0109), LANC2141	CR
	CAMS3001	Biometry & Experimental Design in AMS	3	CAMS2000, FPCS(0101 or 0102), FPMT(0105 or 0109), LANC2141	CR
	SWAE2001	Introduction to Agricultural Engineering	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	CE
		College Elective	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	CE
TOTAL		16			

FIVE FALL	MATH2107	Calculus I	4	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604), FPMT(0105 or 0109)	AR
	SWAE3303	Elements of Hydrology	3	PHYS(2101 or 2107), SWAE(2201 or 2001)	AR
	SWAE3308	Instrumentation & Control Systems	3	MATH2107, PHYS2101	AR
	SWAE3310	Fundamentals of Fluid Mechanics	3	MATH2107, PHYS(2101 or 2107)	AR
	SWAEXXXX	Major Elective	3	Check pre-requisites	AE
	TOTAL		16		

SIX SPRING	SWAE3001	GIS for Environmentalists	3	LANC(2141 or 2041 or 2052 or 2058)	AR
	SWAE3304	Soil & Water Conservation	3	PHYS2101 , SWAE(2001 or 2201)	AR
	SWAE3305	Agro-climatology	3	PHYS2101	AR
	SWAE3315	Water Quality	3	CHEM2101, SWAE2201	AR
	SWAE3311	Environmental Soil Physics	3	PHYS2101, SWAE2201	AR
TOTAL			15		

SEVEN FALL	SWAE3005	Land Surveying	3	MATH2107 and PHYS2101	AR
	SWAE3402	Irrigation Principles	3	SWAE2201	AR
	SWAE4217	Transport of Chemicals in Porous Media	3	SWAE(3303, 3311) + CR*	AR
	SWAEXXXX	Major Elective	3	Check pre-requisites	AE
	SWAEXXXX	Major Elective	3	Check pre-requisites	AE
TOTAL			15		

EIGHT SPRING	SWAE4305	Water Control & Supply	3	SWAE(2201, 3310) + CR*	AR
	SWAE4400	Ground Water Hydrology	3	SWAE3303 + CR*	AR
	SWAE4402	Design & Manage. Irrigation Systems	3	SWAE(3310, 3402) + CR*	AR
	SWAEXXXX	Major Elective	3	Check pre-requisites	AE
	SWAEXXXX	Major Elective	3	Check pre-requisites	AE
TOTAL			15		

SUMMER	SWAE4800	SWAE Internship	3	After 90 Credits + CR*	AR
	TOTAL			3	

NINE FALL	CAMS4001	Management and Business Skills	3	CR*	CR
	SWAE4325	Water Treatment	3	CHEM2101, MATH2107, SWAE3315 + CR*	AR
	SWAE4415	Water Res. Management & Legist.	3	MATH2107, SWAE3303 + CR*	AR
	SWAEXXXX	Major Elective	3	Check pre-requisites	AE
	SWAEXXXX	Major Elective	3	Check pre-requisites	AE
TOTAL			15		

* CR - CAMS college requirement courses which are BIOL2101, CAMS2000, CAMS2003, CAMS3000, CAMS3001, CHEM2101, PHYS2101 or PHYS2107.

DEPARTMENT OF SOIL, WATER AND AGRICULTURAL ENGINEERING

WATER TECHNOLOGY

LIST B: College Requirements (29 Credits)

Course Code	Course Title	Cr.	Pre-Requisite	Equivalents
BIOL2101	General Biology I	4	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	
CAMS2000	Introduction to Agricultural and Marine Sciences	0		
CAMS2003	Introduction to Food and Resource Economics	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	
CAMS3000	Seminar and Presentation Skills	2	CAMS2000, FPCS(0101 or 0102), FPMT(0105 or 0109), LANC2141	
CAMS3001	Biometry and Experimental Design in AMS	3	CAMS2000, FPCS(0101 or 0102), FPMT(0105 or 0109), LANC2141	
CAMS4001	Management and Business Skills	3	CR*	
CHEM2101	General Chemistry I	4	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604), FPMT(0105 or 0109)	
LANC2140	English for CAMS I	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	
LANC2141	English for CAMS II	3	LANC(2140 or 2142)	
PHYS2101	General Physics I	4	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604), FPMT(0105 or 0109)	

LIST C: College Electives (9 Credits)

Course Code	Course Title	Cr.	Pre-Requisite	Equivalents
ANVS2101	Principles of Animal Science	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	ANVS2001
ANVS2201	Introduction to Veterinary Technology	3		ANVS2002
CROP2510	Introduction to Crop Production	3		
FSHN2101	Principles of Food Science	3		FSHN2071
FSHN2301	Introduction to Human Nutrition and Dietetics	3		
MASF2003	Introduction to Marine Science and Fisheries	3		
SWAE2001	Introduction to Agricultural Engineering	3		
SWAE2201	Introduction to Soils and Water	3		

* CR - CAMS college requirement courses which are BIOL2101, CAMS2000, CAMS2003, CAMS3000, CAMS3001, CHEM2101, PHYS2101 or PHYS2107.

DEPARTMENT OF SOIL, WATER AND AGRICULTURAL ENGINEERING

WATER TECHNOLOGY

LIST F: Major Requirements (55 Credits)

Course Code	Course Title	Cr.	Pre-Requisite	Equivalents
MATH2107	Calculus I	4	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604), FPMT(0105 or 0109)	
SWAE3001	GIS for Environmentalists	3	LANC(2141 or 2041 or 2052 or 2058)	
SWAE3005	Land Surveying	3	MATH2107, PHYS2101	
SWAE3303	Elements of Hydrology	3	PHYS(2101 or 2107), SWAE(2201 or 2001)	
SWAE3304	Soil & Water Conservation	3	PHYS2101, SWAE(2001 or 2201)	
SWAE3305	Agro-Climatology	3	PHYS2101	
SWAE3308	Instrumentation & Control Systems	3	MATH2107, PHYS2101	
SWAE3310	Fundamentals of Fluid Mechanics	3	MATH2107, PHYS(2101 or 2107)	
SWAE3311	Environmental Soil Physics	3	PHYS2101, SWAE2201	
SWAE3315	Water Quality	3	CHEM2101, SWAE2201	
SWAE3402	Irrigation Principles	3	SWAE2201	
SWAE4217	Transport of Chemicals in Porous Media	3	SWAE(3303, 3311) + CR*	
SWAE4305	Water Control and Supply	3	SWAE(2201, 3310) + CR*	
SWAE4325	Water Treatment	3	CHEM2101, MATH2107, SWAE3315 + CR*	
SWAE4400	Ground Water Hydrology	3	SWAE3303 + CR*	
SWAE4402	Design & Management of Irrigation Systems	3	SWAE(3310, 3402) + CR*	
SWAE4415	Water Resources Management & Legislation	3	MATH2107, SWAE3303 + CR*	
SWAE4800	SWAE Internship	3	After 90 Credits + CR*	

LIST G: Major Electives (21 Credits)**

Course Code	Course Title	Cr.	Pre-Requisite	Equivalents
CHPE4302	Desalination	3	MEIE3141	
ERSC2101	Introduction to Geology	4	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)	
ERSC4031	Geochemistry	3	CHEM2101, CHEM2201, ERSC2102	
ERSC4041	Introduction to Geophysics	3	ERSC2101, PETR3246, PHYS2101	
MEIE3141	Thermodynamics	3	CHEM2101, MATH2107, PHYS(2101 or 2107)	
SWAE3002	Desertification & Land Restoration	3	SWAE2201	
SWAE3306	Computer Programming	3	MATH2107, PHYS(2101 or 2107)	
SWAE4006	Arid-Zone Hydrology	3	SWAE3303 + CR*	
SWAE4111	Hydropedology for Soil-Water-Landscape Interactions	3	SWAE(2201, 3303, 3311) + CR*	
SWAE4304	Modeling & Analysis of Biophysical Systems	3	PHYS2101 + CR*	
SWAE4401	Water & Nutrients in Soil-Plant Environments	3	SWAE2201 + CR*	
SWAE4412	Management of Salt-Affected Soils	3	SWAE2201 + CR*	
SWAE4900	SWAE Special Problems	3	After 90 Credits, GPA>2.5 + CR*	

* CR - CAMS college requirement courses which are BIOL2101, CAMS2000, CAMS2003, CAMS3000, CAMS3001, CHEM2101, PHYS2101 or PHYS2107.

** Courses from any Department (preferably related to a Minor) of the College of Agricultural and Marine Sciences or another College, may be selected with the approval of Academic Advisor, Head of Department and Assistant Dean of Undergraduate Studies. **No course will be approved without filling the substitution form and getting all necessary approvals prior registering any course not listed in the above degree plan.**

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LIST J: Minor Requirements (3 Credits)

Course Code	Course Title	Cr.	Pre-Requisite
SWAE2201	Introduction to Soil and Water	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)

LIST K: Minor Electives (15 Credits)

Course Code	Course Title	Cr.	Pre-Requisite
SWAE3303	Elements of Hydrology	3	PHYS(2101 or 2107), SWAE(2201 or 2001)
SWAE3310	Fundamentals of Fluid Mechanics	3	MATH2107, PHYS(2101 or 2107)
SWAE3315	Water Quality	3	CHEM2101, SWAE2201
SWAE3402	Irrigation Principles	3	SWAE2201
SWAE4217	Transport of Chemicals in Porous Media	3	SWAE(3303, 3311) + CR*
SWAE4305	Water Control and Supply	3	SWAE(2201, 3310) + CR*
SWAE4325	Water Treatment	3	CHEM2101, MATH2107, SWAE3315 + CR*
SWAE4400	Ground Water Hydrology	3	SWAE3303 + CR*
SWAE4402	Design & Management of Irrigation Systems	3	SWAE(3310, 3402) + CR*
SWAE4415	Water Resources Management and Legislation	3	MATH2107, SWAE3303 + CR*

* CR - CAMS college requirement courses which are BIOL2101, CAMS2000, CAMS2003, CAMS3000, CAMS3001, CHEM2101, PHYS2101 or PHYS2107.

LIST J: MINOR REQUIREMENTS (2010-2013)

Within CAMS (18 credits):

J1. Minor in Animal Science (18 credits)

Course Code	Course Title	Cr.	Pre-Requisite / Co-Req. *
ANVS2101	Principle of Animal Science	3	FPEL(0600 or 0601 or 0602 or 0603 or 0604)
Four courses from the following			
ANVS3101	Genetics and Animal Breeding	3	ANVS(2101 or 2201), BIOL2101
ANVS3102	Animal Health	3	ANVS(2101 or 2201), BIOL2101
ANVS3104	Anatomy and Histology	3	ANVS(2101 or 2201), BIOL2101
ANVS3105	Fundamentals of Nutrition	3	(ANVS(2101 or 2201) or FSHN2071), BIOL2101
ANVS3106	Systemic Physiology	3	ANVS(2101 or 2201), BIOL2101
ANVS3107	Animal Reproductive Physiology	3	ANVS(2101 or 2201), BIOL2101
ANVS3208	Veterinary Immunology	3	ANVS(2101 or 2201), BIOL2101
ANVS4101	Dairy Production	3	ANVS(2101 or 2201) + CR*
ANVS4102	Poultry Production	3	ANVS(2101 or 2201) + CR*
ANVS4104	Camel Physiology and Husbandry	3	ANVS(2101 or 2201) + CR*
ANVS4106	Sheep and Goat Production	3	ANVS(2101 or 2201) + CR*
ANVS4107	Animal Nutrition	3	ANVS3105 + CR*
ANVS4108	Meat Science	3	ANVS(2101 or 2201) + CR*
ANVS4111	Horse Management and Care	3	ANVS(2101 or 2201) + CR*

J2. Minor in Crop Sciences (18 credits)

Course Code	Course Title	Cr.	Pre-Requisite / Co-Req. *
CROP2510	Introduction to Crop Sciences	3	FPEL(0600 or 0601 or 0602 or 0603 or 0604)
Five courses from the following			
CROP2011	Ornamental Horticulture	3	BIOL2101
CROP3502	Forages and Pastures	3	BIOL2101
CROP3512	Vegetable Production	3	CROP2510
CROP3514	Fruit Production	3	CROP2510
CROP3522	Plant Pathology	3	BIOL2101
CROP3526	General Entomology	3	BIOL2101
CROP4005	Field Crop Production	3	CROP2510 + CR*
CROP4514	Landscape Plant Management	3	CROP(2011, 2510) + CR*

J3. Minor in Food Science (18 credits)

Course Code	Course Title	Cr.	Pre-Requisite / Co-Req. *
FSHN2101	Principles of Food Science	3	FPEL(0600 or 0601 or 0602 or 0603 or 0604)
Five courses from the following			
FSHN3101	Properties of Food & Agricultural Materials	3	(FSHN2101 or SWAE2001), PHYS(2101 or 2107)
FSHN3103	Food Analysis	3	CHEM3323, FSHN2302
FSHN3104	Food Chemistry I	3	CHEM3323, FSHN2302
FSHN3105	Food Microbiology I	3	BIOL3441
FSHN3106	Food Processing I	3	FSHN2101 or SWAE2001
FSHN3107	Food Sanitation and Quality Control	3	BIOL3441, FSHN2101
FSHN3108	Food Packaging	3	FSHN3102 or PHYS2102
FSHN3109	Sensory Evaluation of Food	3	CAMS3001, FSHN2101
FSHN4107	Milk and Milk Products	3	FSHN(3104, 3105, 3106) + CR*

J4. Minor in Human Nutrition (18 credits)

Course Code	Course Title	Cr.	Pre-Requisite / Co-Req. *
FSHN2301	Introduction to Human Nutrition and Dietetics	3	FPEL(0600 or 0601 or 0602 or 0603 or 0604)
Five courses from the following			
FSHN2302	Principles of Biochemistry	3	BIOL2101, CHEM2101
FSHN3305	Macronutrients in Human Nutrition	3	FSHN2301, (BIOL2101 or CHEM2101)
FSHN3306	Micronutrients in Human Nutrition	3	FSHN3305
FSHN3307	Nutrition Assessment and Planning	3	FSHN(2301, 3306)
FSHN4111	Public Sanitation****	3	BIOL3441, FSHN2101 + CR*
FSHN4303	Life Cycle Nutrition	3	FSHN(2301, 3307) + CR*
FSHN4306	Community Nutrition	3	FSHN(2301, 3307) + CR*

**** Students who pass FSHN3075 cannot take FSHN4111

J5. Minor in Marine Science and Fisheries (18 credits)

Course Code	Course Title	Cr.	Pre-Requisite / Co-Req. *
MASF2003	Introduction to Marine Science and Fisheries	3	FPEL(0600 or 0601 or 0602 or 0603 or 0604)
MASFXXX	Any MASF2000/3000/4000 level courses (excluding University Electives)	15	Check pre-requisites

J6. Minor in Natural Resource Economics (18 credits)

Course Code	Course Title	Cr.	Pre-Requisite / Co-Req. *
CAMS2003	Introduction to Food and Resource Economics	3	FPEL(0600 or 0601 or 0602 or 0603 or 0604)
NRECXXX	Any NREC2000/3000/4000 level courses (excluding University Electives, NREC2003 and NREC4001 courses)	15	Check pre-requisites

J7. Minor in Soil Sciences (18 credits)

Course Code	Course Title	Cr.	Pre-Requisite / Co-Req. *
SWAE2201	Introduction to Soil and Water	3	FPEL(0600 or 0601 or 0602 or 0603 or 0604)
Five courses from the following			
SWAE3002	Desertification & Land Restoration	3	SWAE2201
SWAE3302	Environmental Soil Chemistry	3	CHEM2101, SWAE2201
SWAE3304	Soil and Water Conservation	3	PHYS2101, (SWAE2001 or SWAE2201)
SWAE3311	Environmental Soil Physics	3	PHYS2101, (SWAE2001 or SWAE2201)
SWAE3411	Environmental Soil Microbiology	3	BIOL2101
SWAE4111	Hydropedology for Soil-Water-Landscape Interactions	3	SWAE(2201, 3303, 3311) + CR*
SWAE4401	Water and Nutrients in Soil-Plant Environments	3	SWAE2201 + CR*
SWAE4404	Soil Genesis and Classification	3	ERSC2101 or SWAE2201 + CR*
SWAE4412	Management of Salt-Affected Soils	3	SWAE2201 + CR*

J8. Minor in Water Technology (18 credits)

Code	Title	Cr.	Pre-Requisite / Co-req. *
SWAE2201	Introduction to Soil and Water	3	FPEL(0600 or 0601 or 0602 or 0603 or 0604)
Five courses from the following			
SWAE3303	Elements of Hydrology	3	PHYS(2101 or 2107), SWAE(2201 or 2001)
SWAE3310	Fundamentals of Fluid Mechanics	3	MATH2107, PHYS(2101 or 2107)
SWAE3315	Water Quality	3	CHEM2101, SWAE2201
SWAE3402	Irrigation Principles	3	SWAE2201
SWAE4217	Transport of Chemicals in Porous Media	3	SWAE(3303, 3311) + CR*
SWAE4305	Water Control and Supply	3	SWAE(2201, 3310) + CR*
SWAE4325	Water Treatment	3	CHEM2101, MATH2107, SWAE3315 + CR*
SWAE4400	Ground Water Hydrology	3	SWAE3303 + CR*
SWAE4402	Design & Management of Irrigation Systems	3	SWAE(3310, 3402) + CR*