



Degree and Study Plan

College: Science
 Department: Mathematics and Statistics
 Cohort: 2016-2020
 Degree: Bachelor of Science
 Major: Statistics
 Specialization: -

<u>Summary of Credits:</u>		
University Requirements (UR)		6
Foundation Program	NC ⁺	
Arabic	3	
Modern Omani Society	1	
Oman & Islamic Civilization or Islamic Culture	2	
University Electives (UE)		6
See List A		
College Requirements (CR)		3
See list B		
College Electives (CE)		16
See list C		
Departmental Requirements (DR)		16
See list D		
Departmental Electives (DE)		9
See list E		
Major Requirements (AR)		39
See list F		
Major Electives (AE)		27
See list G		
Specialization Requirements (SR)		
See list H		
Specialization Electives (SE)		
See list I		
Minor Requirements (IR)	**	
See list J		
Minor Electives (IE)		
See list K		
TOTAL		122

⁺ Not credited.

^{**} Minor is optional: total credits to earn a Minor are 18, with no more than 8 credits counting towards the Major degree may count towards a Minor.

For reference contact Dr. Charles Saki Bakheit

HoD: Dr. Khidir Abdelbasit

Dean's Office: Prof. Salma Al-Kindy

Admission and Registration:

Ext: 1416

Date: 15/11/2016

Date: 15/11/2016

Date:



Department of Mathematics and Statistics.
Statistics Degree Plan for Cohort 2016-2020

Categories	CR
University Requirements (UR)	6
University Electives (UE)	6
College Requirement (CR)	3
College Electives (CE)	16
Departmental Requirements (DR)	16
Departmental Electives (DE)	9
Major Requirements (AR)	39
Major Electives (AE)	27
TOTAL	122

Semester 1 Fall	Course Code	Course Title	Cr.	Pre-Requisite/Co-Requisite*	Cat.
	ARAB1001	Arabic	3		UR
	SOCY1001	Omani Contemporary Society	1		UR
	LANC2058	Communication in Science	3	FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604	CR
	MATH2107	Calculus 1	4	FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109)	CE
	STAT2101	Introduction to Statistics	4	FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109)	CE
	Total			15	

Semester 2 Spring	HIST1010 or ISLAM1010	Oman & Islamic Civilization or Islamic Culture	2		UR
	COMP2101	Introduction to Computer Science	4	FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 and (FPCS0101 or FPCS0102)	CE
	MATH2108	Calculus II	3	MATH2107	DR
	MATH2350	Foundations of Mathematics	3	MATH2107	DR
	STAT2102	Introduction to Probability	3	STAT2101, MATH2108*	DR
	Total			15	

Semester 3 Spring	Course Code	Course Title	Cr.	Pre-Requisite/Co-Requisite*	Cat.
	MATH2202	Linear Algebra I	3	FPMT0105/0109&FPPEL0601/0602/0603	DR
	COMP2200	Fundamentals of Object Oriented Programming	3	COMP2101	AR
	STAT3334	Introduction to Inference	3	STAT2102 & LANC2058	AR
		College Elective	4		CE
		University Elective	2		UE
Total			15		

Semester 4 Spring	MATH3110	Calculus III	4	MATH2108 & LANC2058	DR
	STAT3335	Introduction to Sampling	3	STAT2102 and LANC2058	AR
	STAT3338	Statistical Methods	3	STAT3334 & LANC2058	AR
	STAT3336	Computational Techniques in Statistics	3	STAT2102, COMP2200 & LANC2058	AR
		Major Elective	3		AE
Total			16		

Semester 5 Fall	STAT4432	Regression Analysis	3	MATH2202, STAT3334	AR
	STAT4433	Design and Analysis of Experiments I	3	STAT3338	AR
		Departmental Elective	3		DE
		Major Elective	3		AE
		Major Elective	3		AE
Total			15		

Semester 6 Spring	STAT4434	Non-Parametric Statistics	3	STAT3334	AR
		Departmental Elective	3		DE
		Major Elective	3		AE
		Major Elective	3		AE
		University Electives (2)	4		UE
Total			16		

Semester 7 Fall	STAT5521	Categorical Data Analysis	3	STAT3338	AR
	STAT5537	Multivariate Techniques	3	STAT3334, MATH2202, MATH3110	AR
	STAT5556	Project in Statistics I	3	STAT 4432, STAT 4433	AR
		Departmental Elective	3		DE
		Major Elective	3		AE
Total			15		

	Course Code	Course Title	Cr.	Pre-Requisite/Co-Requisite*	Cat.
Semester 8 Spring	STAT5536	Time Series Analysis	3	STAT 4432	AR
	STAT5557	Project in Statistics II	3	STAT 4432, STAT4433	AR
		Major Elective	3		AE
		Major Elective	3		AE
		Major Elective	3		AE
Total			15		

**Department of Mathematics and Statistics – Statistics Degree Plan: Cohort 2016-2020
UNIVERSITY REQUIREMENTS (UR) (6 CREDITS)**

Course code	Course Title	Cr	Prerequisites /Co-Requisite*
ARAB1001	Arabic	3	
HIST1010 or ISLM1010	Oman & Islamic Civilization or Islamic Culture	2	
SOCI1001	Contemporary Omani Society	1	

LIST A: UNIVERSITY ELECTIVES (UE) (6 Credits)

See SQU Deanship of Admission and Registration website for the list of University Electives
<https://sis.squ.edu.om/sis/webreg/3s/electiveTimeTable.jsp>

LIST B: COLLEGE REQUIREMENTS (CR) (3 Credits)

Course Code	Course Title	Credits	Pre-Requisite / Co-Req. *
LANC2058 [†]	Communication in Science	3	FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604

[†]LANC2058 is a pre-requisite for all 3000-level College of Science courses.

LIST C: COLLEGE ELECTIVES (CE) (16 Credits)

Course Code	Course Title	Credits	Pre-Requisite / Co-Req. *
BIOL2101	General Biology I	4	FPEL0560 or FPEL0600 or FPEL601 or FPEL602 or FPEL0603 or FPEL0604
CHEM2101	General Chemistry I	4	FPEL0560 or FPEL0600 or FPEL601 or FPEL602 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109)
COMP2101 ⁺	Introduction to Computer Science	4	FPEL0560 or FPEL0600 or FPEL601 or FPEL602 or FPEL0603 or FPEL0604 and (FPCS0101/FPCS0102)
ERSC2101	Introduction to Geology I	4	FPEL0560 or FPEL0600 or FPEL601 or FPEL602 or FPEL0603 or FPEL0604

MATH2107 ⁺	Calculus I	4	FPEL0560 or FPEL0600 or FPEL601 or FPEL602 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109)
PHYS2101	General Physics I	4	FPEL0560 or FPEL0600 or FPEL601 or FPEL602 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109)
STAT2101 ⁺	Introduction to Statistics	4	FPEL0560 or FPEL0600 or FPEL601 or FPEL602 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109)

⁺MATH2107 and STAT2101 are important pre-requisite courses for Mathematics & Statistics departmental requirements. ⁺⁺COMP2101 is a required course for Mathematics and Statistics degrees. Credits taken in excess of 16 can be counted as Major Electives (List G)

LIST D: DEPARTMENTAL REQUIREMENTS (DR) (16 Credits)

Course Code	Course Title	Credits	Pre-Requisite / Co-req. *
MATH2108	Calculus II	3	MATH2107
MATH2202	Linear Algebra I	3	FPEL0560 or FPEL0600 or FPEL0603 or FPEL0604 and FPMT0105 or FPMT0109
MATH2350	Foundations of Mathematics	3	MATH2107
MATH3110	Calculus III	4	MATH2108 & LANC2058
STAT2102	Introduction to Probability	3	STAT2101 MATH2108*

LIST E: DEPARTMENTAL ELECTIVES (DE) (9 Credits)

Course Code	Course Title	Credits	Pre-Requisite / Co-req. *
STAT3331	Operations Research I	3	MATH2108 & STAT2101 & LANC2058
STAT3337	Introduction to Actuarial Science I	3	STAT2102 & LANC2058
STAT4422	Demographic and Health Care Statistics	3	STAT3334
STAT4436	Survey Design	3	STAT3335
STAT4533	Quality Assurance and Reliability	3	STAT2102
STAT4534	Simulation	3	STAT3336
	Total	9	

Credits taken in excess of 9 can be counted as Major Electives (List G)

LIST F: MAJOR REQUIREMENTS (AR) (39 Credits)

Course Code	Course Title	Credits	Pre-Requisite / Co-req. *
ENGR2216	FORTTRAN Programming for Engineers	3	
STAT3334	Introduction to Inference	3	STAT2102 & LANC2058
STAT3335	Introduction to Sampling	3	STAT2102 & LANC2058
STAT3336	Computational Techniques	3	STAT2102+ COMP2200 & LANC2058
STAT3338	Statistical Methods	3	STAT3334 & LANC2058
STAT4432	Regression Analysis	3	MATH2202+ STAT3334
STAT4433	Design and Analysis of Experiments I	3	STAT3338

STAT4434	Non-parametric Statistics	3	STAT3334
STAT5521	Categorical Data Analysis	3	STAT3338
STAT5536	Time Series Analysis	3	STAT4432
STAT5537	Multivariate Techniques	3	MATH2202+ MATH3110+ STAT3334
STAT5556	Project in Statistics I	3	STAT 4432, STAT 4433
STAT5557	Project in Statistics II	3	STAT 4432, STAT 4433
Total		39	

LIST G: MAJOR ELECTIVES (AE) (27 Credits)

Course Code	Course Title	Credits	Pre-Requisite / Co-Requisite*
BIOL2101	General Biology I	4	FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604
BIOL2102	General Biology II	4	BIOL2101
BIOL2105	Human Physiology	4	BIOL2101
BIOL2600	Biodiversity	3	BIOL2101
BIOL3002	Nature Conservation in Oman	3	BIOL2101 and LANC2058
BIOL3005	Ecology	3	BIOL2102 and LANC2058
BIOL3009	Introduction to Environmental Science	3	BIOL2102 and LANC2058
BIOL3011	Plant Physiology	3	BIOL2102 and LANC2058
BIOL3023	Animal Physiology	4	BIOL2102 and LANC2058
BIOL3025	Invertebrates	3	BIOL2102 and LANC2058
BIOL3202	Molecular Biology	3	BIOL2101 and LANC2058
BIOL3410	Angiosperm Biology	3	BIOL2102 and LANC2058
BIOL3441	Introductory Microbiology	3	BIOL2101 and LANC2058
BIOL4000	Generic Skills for Biologists	3	BIOL2101
BIOL4009	Waste Management	3	BIOL3009
BIOL4021	Vertebrate Zoology	3	BIOL2102
BIOL4023	Entomology	3	BIOL2102
BIOL4030	Bacteriology	3	BIOL3441
BIOL4034	Biochemistry	3	BIOL2101 and CHEM3324
BIOL4041	Animal Histology	3	BIOL2102 or BIOL2105
BIOL4042	Parasitology	3	BIOL2102
BIOL4046	Fundamentals Of Biotechnology	3	BIOL3202, BIOL3441
BIOL4054	Marine Biology	3	BIOL3005
BIOL4432	Genetics	3	BIOL2101
BIOL4500	Cell Biology	3	BIOL2101 or MEDI2108
BIOL4501	Principles of Toxicology	3	BIOL2101
BIOL4600	Biofuels	3	BIOL4030
BIOL4640	Environmental Pollution	3	BIOL4009
BIOL4700	Environmental Biotechnology	3	BIOL3441
BIOL5010	Ecotoxicology	3	BIOL3009
BIOL5021	Desert Biology	3	BIOL3005
BIOL5031	Enzyme Biochemistry	3	BIOL4034
BIOL5034	Plant Metabolites	3	BIOL4034
BIOL5040	Genetic Engineering	3	BIOL3202
BIOL5042	Embryology	3	BIOL2102
BIOL5045	Economy Botany	3	BIOL2102
BIOL5052	Freshwater Biology	3	BIOL3005
BIOL5054	Biological Conservation	3	BIOL3005
BIOL5110	Special Topics in Biology	3	Instructor
BIOL5120	Microbial Biotechnology	3	BIOL3441, BIOL4046
BIOL5132	Tissue Culture	3	BIOL4500
BIOL5133	Plant biotechnology	3	BIOL4046
BIOL5144	Applied Mycology	3	BIOL3441

BIOL5244	Cytogenetics	3	BIOL4432
BIOL5400	Bio-Informatics	3	BIOL3201
BIOL5401	Environmental microbiology techniques	3	BIOL3009, BIOL3201
BIOL5402	Immunology	3	BIOL3441, BIOL4500
BIOL5411	Fermentation Technology	3	BIOL4030
BIOL5501	Protein Production and Characterization	3	BIOL4034, BIOL4046
BIOL5600	Techniques in Molecular Diversity	3	BIOL3202
BIOL5610	Environmental Impact Assessment	3	BIOL3009
CHEM2101	General Chemistry I [†]	4	FPEL0560 or FPEL0600 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109)
CHEM2102	General Chemistry II	4	CHEM2101 or CHEM1071
CHEM2350	Chemical Safety: Protecting ourselves and the environment	3	CHEM2101 or CHEM1071 or CHEM2110
CHEM3311	Inorganic Chemistry I	3	LANC2058 and CHEM2102 and MATH2107
CHEM3322	Organic Chemistry I	4	LANC2058 and CHEM2101
CHEM3328	Green Chemistry	3	LANC2058 and (CHEM3322 or CHEM3324)
CHEM3333	Physical Chemistry I	3	LANC2058 and CHEM2101 and PHYS2101 and MATH2107
CHEM3337	Fundamentals of the Corrosion of Metals	3	LANC2058 and (CHEM2101 or CHEM1071)
CHEM3348	Introduction to Chemical and Instrumental Analysis	3	CHEM2102
CHEM3350	Environmental Chemistry	3	LANC2058 and CHEM2102
CHEM3400	Introduction to Chemical Process Industries	3	LANC2058 and CHEM2101 and CHEM3333*
CHEM3420	Petroleum Chemistry	3	LANC2058 and (CHEM3322 or CHEM3324)
CHEM4412	Inorganic Materials	3	CHEM3311
CHEM4414	Fundamentals of X-ray Crystallography	3	CHEM3311
CHEM4424	Introduction to Natural Products	3	CHEM4424 or CHEM4422
CHEM4429	Fundamentals of Medicinal Chemistry and Drug Design	3	CHEM3324 or CHEM4422
CHEM4433	Physical Chemistry II	3	MATH2108 and CHEM3333
CHEM4437	Electrochemistry: Fundamentals and Applications	3	CHEM3333
CHEM4445	Forensic Chemistry	3	CHEM3341 or CHEM3348
CHEM4472	Fine Chemicals	3	CHEM3324 or CHEM4422
CHEM4477	Essentials of Biological Chemistry	3	CHEM3324 or CHEM4422
CHEM5537	Surfactants: Principles & Applications in the Petroleum Industry	3	CHEM3333 or CHPE3102
CHEM5539	Chemical Sensors	3	CHEM3333 and (CHEM3348 or CHEM4441)
CHEM5591	Chemistry Seminar I	1	CHEM3322 or CHEM3324
COMP2102	Problem Solving and Programming	3	COMP2101
COMP2105	Introduction to Problem Solving with Visual Basic	3	COMP2101
COMP2206	Introduction to Java	3	COMP3200
COMP3100	Ethical and Social Issues for Computing Profession	1	COMP3401 and LANC2058
COMP3200	Object Oriented Programming	3	COMP2102 and LANC2058
COMP3203	Introduction to Data Structures and Algorithms	3	COMP3200 and LANC2058
COMP3204	Advanced Java Programming	3	COMP2206 and LANC2058
COMP3302	Introduction to Multimedia	3	COMP3200 and LANC2058
COMP3401	Introduction to Software Engineering	4	COMP3200 and LANC2058
COMP3501	Computer Organization & Assembly Language	3	COMP2102 and ECCE3206

			and LANC2058
COMP3601	Bioinformatics Algorithms	3	BIOL2101 and COMP2101
COMP3700	Introduction to Web Computing	3	COMP3200 and LANC2058
COMP3702	Principles of Web Applications	3	COMP3700 and LANC2058
COMP4201	Introduction to Database Systems	3	COMP3203
COMP4202	Database Development	3	COMP4201
COMP4204	Advanced Data Structures and Algorithms	3	COMP3203 and MATH3340
COMP4206	Mobile Applications Development	3	COMP2206 and COMP3700
COMP4212	Introduction to Information Retrieval		COMP3202
COMP4300	Computer Graphics I	3	COMP3202 and MATH2202
COMP4401	Analysis, Design, and Architecture of Software Systems	3	COMP3401
COMP4402	Software Testing	3	COMP3401
COMP4404	Software Project Management	3	COMP3401
COMP4471	Computational Methods I	3	COMP2101 and MATH2108 and MATH2202
COMP4501	Fundamentals of Operating Systems	3	COMP3203 and COMP3501
COMP4502	Networks & Communication	3	COMP3501
COMP4601	Introduction to Intelligent Systems	3	COMP3203
COMP4702	Advanced Web Applications Development	3	COMP3702
COMP4703	Web Data Mining and Social Networking	3	COMP3700 and (STAT2102 or STAT2103)
COMP5101	Comparative Programming Languages	3	COMP3203 and COMP3501
COMP5204	Computer Science Special Topics I	3	Instructor Consent
COMP5302	Digital Image Processing	3	COMP3202 or COMP3203
COMP5506	Wireless Networks and Mobile Computing	3	COMP4501 and COMP 4502
COMP5507	Cryptography and Network Security	3	COMP3203 and COMP4502
COMP5508	Interconnection Networks for Multiprocessor and Multicore Systems	3	COMP4502 or COMP5501
COMP5521	Finite Automata & Formal Languages	3	MATH3340
COMP5522	Compiler Construction	3	COMP3501 and COMP5521
COMP5601	Machine Learning	3	COMP3203 and MATH2202 and STAT2103
COMP5701	Web Services	3	COMP3702
ERSC2011	Palaeontology I	3	ERSC2101
ERSC2101	Introduction to Geology I	4	FPEL0560 or FPEL0600 or FPEL0603 or FPEL0604
ERSC2102	Introduction to Geology II	4	ERSC2101
ERSC2112	Historical Geology	3	ERSC2101
ERSC3000	Environmental Geology	3	ERSC2101 and CHEM2101 and LANC2058
ERSC3002	Environmental Site Assessment and Remediation	3	ERSC2102 and ERSC 3000 and LANC2058
ERSC3010	Mineralogy	3	ERSC2102 and LANC2058
ERSC3021	Structural Geology	3	ERSC2102 and LANC2058
ERSC3041	Stratigraphy	3	ERSC2102 and LANC2058
ERSC3061	Introduction to Remote Sensing	3	ERSC2102 and LANC2058
ERSC3071	GIS and Geo-Spatial Applications	3	ERSC2102
ERSC3210	Palaeontology II	3	ERSC2011
ERSC3901	Sedimentary Petrology	3	ERSC3010 and LANC2058
ERSC4031	Geochemistry	3	ERSC2102 and CHEM2101
ERSC4032	Environmental Geochemistry	3	ERSC2101 and CHEM2101
ERSC4051	Hydrogeology	3	ERSC2102
ERSC4071	Economic Geology	3	ERSC3051
ERSC4311	Sedimentary Environments and Facies	3	ERSC3901
ERSC4321	Structural Geology II	3	ERSC3021
ERSC5011	Basin Analysis		ERSC3021 and ERSC4311
ERSC5051	Petroleum Geology	3	ERSC3041
ERSC5061	Exploration Geophysics	3	GEOP3041

ERSC5071	Image Processing and GIS	3	ERSC3061
ERSC5900	Advanced Diagenesis and Sedimentary Geochemistry	3	ERSC3901
GEOP3000	Earthquakes and Society	3	ERSC2101 and LANC2058
GEOP3041	General Geophysics	3	ERSC2101 and PHYS2101 and MATH2107 and LANC2058
GEOP3042	Principles of Geophysical Well Logging	3	GEOP3041 and LANC2058
GEOP4001	Applied Geophysics I	3	GEOP3041 and PHYS3100
GEOP4002	Applied Geophysics II	3	GEOP3041 and PHYS3012
GEOP4003	Gravity and Magnetic Exploration Methods	3	GEOP3041
GEOP4010	Fundamentals of Signal Processing	3	GEOP4001 and PHYS3100 and (MATH3171 or MATH3302)
GEOP4011	Geophysical Data Processing	3	GEOP4001 and MATH3171
GEOP5021	Engineering and Environmental Geophysics	3	GEOP3041
GEOP5060	Interpretation of Seismic Reflection Data	3	ERSC3041 and GEOP3041
LANC2146	Academic Writing in Science	3	LANC2058
MATH3302	Ordinary Differential Equations	3	LANC2058 and MATH2108
MATH3303	Linear Algebra II	3	LANC2058 and MATH2202
MATH3360	Discrete Mathematics	3	LANC2058 and MATH2350
MATH3573	Graph Theory	3	LANC2058 and MATH3360
MATH3730	Computer Algebra System I	2	LANC2058 and MATH2202 and MATH3110
MATH3744	Introduction to Mathematical Modeling	3	LANC2058 and MATH3110 and MATH3302
MATH4141	Numerical Analysis	3	MATH2108 and MATH2202
MATH4450	Real Analysis I	3	MATH2108 and MATH2350
MATH4452	Introduction to Complex Variables	3	MATH3110 or MATH3171
MATH4453	Abstract Algebra I	3	MATH2202 and MATH2350
MATH4455	Abstract Algebra II	3	MATH4453
MATH4473	Linear Programming	3	MATH2202 or MATH3171
MATH4474	Introduction to Partial Differential Equations	3	MATH3302
MATH4481	Introduction to Optimization	3	MATH2108 and (MATH2202 or MATH3171)
MATH4552	Logic and Set Theory	3	MATH2350 or MATH3340
MATH5451	Real Analysis II	3	MATH4450
MATH5470	Integral Transforms	3	MATH4474 and MATH4452*
MATH5551	Fluid Dynamics	3	MATH4474
MATH5553	Differential Geometry I	3	MATH3110 and MATH3303
MATH5558	Introduction to Number Theory	3	MATH2350 or MATH3340
PHYS2101	General Physics I	4	FPEL0560 or FPEL0600 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109)
PHYS2102	General Physics II	4	PHYS2101
PHYS2107	Physics for Engineering I	4	FPEL0560 or FPEL0600 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109) or MATH2107*
PHYS2108	Physics For Engineering II	4	PHYS2101 or PHYS2107
PHYS2901	Introductory Astronomy	3	
PHYS3001	Dynamics	3	LANC2058 and PHYS2101 and PHYS3101
PHYS3012	Electromagnetism	3	LANC2058 and PHYS2102 and MATH3171
PHYS3101	Theoretical Methods of Physics I	3	LANC2058 and MATH3171
PHYS3103	Physics III	3	LANC2058 and PHYS2102 and MATH2107
PHYS3104	Modern Physics	3	LANC2058 and PHYS3103

PHYS3601	Radiation Physics	3	LANC2058 and PHYS3104
PHYS3602	Fundamentals of Radiation Protection	3	LANC2058 and PHYS3601
PHYS3603	Operational Radiation Protection	3	LANC2058 and PHYS3602
PHYS3901	Mysteries of the Universe	3	LANC2058 and (PHYS2801 or PHYS2901)
PHYS3903	Introduction to Space Science	3	LANC2058 and (PHYS2801 or PHYS2801)
PHYS3905	Essentials of Meteorology	3	LANC2058 and PHYS2102 and (PHYS2801 or PHYS2901)
PHYS3907	Observational Techniques in Astronomy	3	LANC2058 and PHYS3901
PHYS4100	Optics & Lasers	3	PHYS3103 and PHYS3012
PHYS4101	Quantum Physics I	3	PHYS3104 and PHYS3101
PHYS4108	Thermal & Statistical Physics	4	PHYS3104
PHYS4601	Ionizing Radiation Detection	3	PHYS3601
PHYS4602	Nuclear Applications	3	PHYS3601
PHYS4901	Stellar Evolution & Nucleosynthesis	3	PHYS3901
PHYS5003	Condensed Matter Physics	3	PHYS4101 and PHYS4018
PHYS5106	Nuclear Physics	3	PHYS4101
PHYS5601	Introduction to Nuclear Power	3	PHYS3601
PHYS5901	Image Processing & Data Analysis	3	PHYS3100 and PHYS3907
STAT3331	Operations Research I	3	STAT2101 & LANC2058
STAT3337	Introduction to Actuarial Science I	3	STAT2102 & LANC2058
STAT4436	Survey Design	3	STAT3335
STAT4533	Quality Assurance and Reliability	3	STAT2102
STAT4422	Demographic and Health Care Statistics	3	STAT3334

**LIST OF APPROVED MINORS WHICH CAN BE TAKE BY
STATISTICS MAJORS**

No	Minor	College
1	Astronomy	Science
2	Biology	Science
3	Business	Economics and Political Science
4	Chemistry	Science
5	Computer Science	Science
6	Earth Science	Science
7	Mathematics	Science
8	Nuclear Physics	Science
9	Physics	Science
10	Soil and Water Sciences	Agriculture and Marine Sciences

Minor is optional: The minimum total credits to earn a Minor are 18. Courses counting towards an Approved Minor may substitute courses listed as Major Electives (List G) but no more than 8 credits counting towards the Major degree (Lists C, D, E, F) may count towards a Minor

Minor in ASTRONOMY			
H. Minor Requirements			
Code	Title	Cr	Pre-req./Co-req.*
PHYS2901	Introductory Astronomy	3	
PHYS3901	Mysteries of the Universe	3	LANC2058 and (PHYS2801 or PHYS2901)
PHYS3905	Essentials of Meteorology	3	LANC2058 and PHYS2102 and (PHYS2801 or PHYS2901)
PHYS3907	Observational Techniques in Astronomy	3	LANC2058 and PHYS3901
PHYS3903	Intro. To Space Science	3	PHYS2901 or PHYS2801

I. Minor Electives			
Code	Title	Cr	Pre-req./Co-req.*
PHYS4901	Stellar Evolution & Nucleosynthesis	3	PHYS3901
PHYS4902	Galactic structure and Cosmology	3	PHYS3901
PHYS5901	Image Processing & Data Analysis	3	PHYS3100 and PHYS3907

Minor in BIOLOGY			
H. Minor Requirements			
Code	Title	Cr	Pre-req./Co-req.*
BIOL2101	General Biology I	4	FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604
BIOL2102	General Biology II	4	BIOL2101
I. Minor Electives			
Code	Title	Cr	Pre-req./Co-req.*
BIOL3005	Ecology	3	BIOL2102 and LANC2058
BIOL3009	Introduction to Environmental Science	3	BIOL2102 and LANC2058
BIOL3011	Plant Physiology	3	BIOL2102 and LANC2058
BIOL3023	Animal Physiology	4	BIOL2102 and LANC2058
BIOL3025	Invertebrates	3	BIOL2102 and LANC2058
BIOL3202	Molecular Biology	3	BIOL2101 and LANC2058
BIOL3410	Angiosperm Biology	3	BIOL2102 and LANC2058
BIOL3441	Introductory Microbiology	3	BIOL2101 and LANC2058
BIOL4030	Bacteriology	3	BIOL3441
BIOL4034	Biochemistry	3	BIOL2101 and (CHEM3322 or CHEM3327)
BIOL4046	Fundamental Of Biotechnology	3	BIOL3202 and BIOL3441
BIOL4432	Introduction to Genetics	3	BIOL2101
BIOL4500	Cell Biology	3	BIOL2101 or MEDI2108
BIOL5021	Desert Biology	3	BIOL3005
BIOL5042	Embryology	3	BIOL2102
BIOL5052	Freshwater Biology	3	BIOL3005
BIOL5402	Immunology	3	BIOL3441 and BIOL4500

Minor in Business			
H. Minor Requirements			
Code	Title	Cr	Pre-req./Co-req.*
POMG2710	Operation Management	3	STAT1811 or equivalent (STAT1001)
POMG3711	Principles of Management Science	3	STAT1811 or equivalent (STAT1001)
ECON1211	Microeconomics	3	
ECON2221	Macroeconomics	3	
MRKT3611	Principles of Marketing	3	ECON1211 and ECON2221
MNGT1515	Principles of Management	3	
ACCT1112	Introduction to Financial Accounting	3	

Minor in CHEMISTRY

H. Minor Requirements			
Code	Title	Cr	Pre-req./Co-req.*
CHEM2101	General Chemistry I	4	(FPEL0560 or FPEL0600 or FPEL0603 or FPEL0604) and (FPMT0105 or FPMT0109)
CHEM2102	General Chemistry II	4	CHEM2101 or CHEM1071
I. Minor Electives			
Any other Electives in Chemistry excluding courses offered as University electives			

Minor in COMPUTER SCIENCE			
H. Minor Requirements			
Code	Title	Cr	Pre-req./Co-req.*
COMP 2101	Introduction to Computer Science	4	FPEL0560 or FPEL0600 or FPEL0603 or FPEL0604) and (FPCS0101 or PCS0102)
COMP 2102	Problem Solving and Programming	3	COMP 2101
COMP 3200	Object Oriented Programming	3	COMP2102 and LANC2058
I. Minor Electives			
Code	Title	Cr	Pre-req./Co-req.*
COMP2105	Introduction to Problem Solving with Visual Basic	3	COMP2101
COMP2206	Introduction to Java	3	COMP3200
COMP3203	Introduction to Data Structures and Algorithms	3	COMP3200 and LANC2058
COMP3204	Advanced Java Programming	3	COMP2206 and LANC2058
COMP3302	Introduction to Multimedia	3	COMP3200 and LANC2058
COMP3401	Introduction to Software Engineering	4	COMP3200 and LANC2058
COMP3501	Computer Organization & Assembly Language	3	COMP2102 and ECCE3206 and LANC2058
COMP3601	Bioinformatics Algorithms	3	BIOL2101 and COMP2101
COMP3700	Introduction to Web Computing	3	COMP3200 and LANC2058
COMP3702	Principles of Web Applications	3	COMP3700 and LANC2058
COMP4201	Introduction to Database Systems	3	COMP3203
COMP4202	Database Development	3	COMP4201
COMP4206	Mobile Applications Development	3	COMP2206 and COMP3700
COMP4212	Introduction to Information Retrieval		COMP3202
COMP4300	Computer Graphics I	3	COMP3202 and MATH2202
COMP4401	Analysis, Design, and Architecture of Software Systems	3	COMP3401
COMP4402	Software Testing	3	COMP3401
COMP4404	Software Project Management	3	COMP3401
COMP4471	Computational Methods I	3	COMP2101 and MATH2108 and MATH2202
COMP4501	Fundamentals of Operating Systems	3	COMP3203 and COMP3501
COMP4502	Networks & Communication	3	COMP3501
COMP4601	Introduction to Intelligent Systems	3	COMP3203
COMP4702	Advanced Web Applications Development	3	COMP3702
COMP4703	Web Data Mining and Social Networking	3	COMP3700 and (STAT2102 or STAT2103)
COMP5302	Digital Image Processing	3	COMP3202 or COMP3203

Minor in Earth Science

H. Minor Requirements			
Code	Title	Cr	Pre-req./Co-req.*
ERSC2101	Introduction to Geology I	4	FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604
ERSC2102	Introduction to Geology II	4	ERSC2101
I. Minor Electives			
Code	Title	Cr	Pre-req./Co-req.*
ERSC2011	Palaeontology I	3	ERSC2101
ERSC3000	Environmental Geology	3	LANC2058 and ERSC2101 and CHEM2101
ERSC3002	Environmental Site Assessment and Remediation	3	LANC2058 and ERSC2102 and ERSC 3000
ERSC3010	Mineralogy	3	LANC2058 and ERSC2102
ERSC3021	Structural Geology	3	LANC2058 and ERSC2102
ERSC3041	Stratigraphy	3	LANC2058 and ERSC2102
ERSC3061	Introduction to Remote Sensing	3	LANC2058 and ERSC2102
ERSC3901	Sedimentary Petrology	3	LANC2058 and ERSC3010
ERSC4031	Geochemistry	3	ERSC2101 and CHEM2101
ERSC4032	Environmental Geochemistry	3	ERSC2101 and CHEM2101
ERSC4051	Hydrogeology	3	ERSC2102
ERSC4071	Economic Geology	3	ERSC3051
ERSC4311	Sedimentary Environments and Facies	3	ERSC3901
ERSC4321	Structural Geology II	3	ERSC3021
ERSC5011	Basin Analysis	3	ERSC3021 and ERSC4311
ERSC5051	Petroleum Geology	3	ERSC3041
ERSC5061	Exploration Geophysics	3	GEOP3041
GEOP3000	Earthquakes and Society	3	LANC2058 and ERSC2101
GEOP3041	General Geophysics	3	LANC2058 and ERSC2101 and MATH12107 and PHYS2101

Minor in Mathematics			
H. Minor requirements			
Code	Title	Cr	Pre-req./Co-req.*
MATH2107	Calculus I	4	FPEL0560 or FPEL0600 or FPEL0601 or FPEL0602 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109)
MATH2108	Calculus II	3	(MATH2107 or FPMT0105 or FPMT0109)
MATH2202†	Linear Algebra I†	3	MATH1106 or FPMT0105 or FPMT0109
MATH3110†	Calculus III†	4	LANC2058 and MATH2108
† MATH 3171 Linear Algebra & Multivariate Calculus (3 credits; Pre-req.: MATH2108) can substitute both MATH2202 and MATH3110 above. However, students who have passed MATH 3171 cannot take MATH 2202 or MATH 3110, and vice versa.			
I. Minor Electives			
Code	Title	Cr	Pre-req./Co-req.*
MATH2350 or MATH3340	Foundations of Mathematic or Discrete Mathematics for Computer Sciences	3 3	MATH2107 MATH2107 and COMP2101
MATH3302 or MATH4174	Ordinary Differential Equations or Differential Equations and Applications for Engineers	3 3	LANC2058 and MATH2108 LANC2058 and MATH2108
MATH3303	Linear Algebra II	3	LANC2058 and MATH2202
MATH3573	Graph theory	3	MATH2350 or MATH3360

MATH3744	Introduction to Mathematical Modelling	3	LANC2058 and MATH3110 and MATH3302
MATH4141	Numerical Analysis	3	MATH2108 and MATH2202
MATH4450	Real Analysis I	3	MATH2108 and (MATH2350 or MATH3340)
MATH4452	Introduction to Complex Variables	3	MATH3110 or MATH3171
MATH4453	Abstract Algebra I	3	MATH2202 and (MATH2350 or MATH3340)
MATH4473	Linear Programming	3	MATH2202 or MATH3171
MATH4474	Introduction to Partial Differential Equations	3	MATH3302
MATH4481	Introduction to Optimisation	3	MATH2108 and (MATH2202 or MATH3171)
MATH5551	Fluid Dynamics	3	MATH4474
MATH5558	Introduction to Number Theory	3	MATH3340 and MATH3350 and MATH3357

Minor in Nuclear Science			
H. Minor Requirements			
Code	Title	Cr	Pre-req./Co-req.*
PHYS 3601	Radiation Physics	3	PHYS 3104
PHYS 3602	Fundamentals of Radiation Protection	3	PHYS 3601
PHYS 3603	Operational Radiation Protection	3	PHYS 3602
PHYS 4601	Ionizing Radiation Detection	3	PHYS 3601
PHYS4602	Nuclear Applications	3	PHYS 4601
PHYS 5601	Introduction to to Nuclear Power	3	PHYS 3601

Minor in PHYSICS			
H. Minor Requirements			
Code	Title	Cr	Pre-req./Co-req.*
PHYS2101	General Physics I	4	FPEL0560 or FPEL0600 or FPEL0603 or FPEL0604 and (FPMT0105 or FPMT0109)
PHYS2102	General Physics II	4	PHYS2101
PHYS3103	Physics III	3	LANC2058 and MATH2107 and PHYS2102
PHYS3104	Modern Physics	3	LANC2058 and PHYS3103
I. Minor Electives			
Any other courses in Physics excluding courses offered as University electives			

Minor in SOIL AND WATER SCIENCES			
J. Minor Requirements			
Code	Title	Cr	Pre-req./Co-req.*
SWAE2201	Introduction to Soil and Water	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)
K. Minor Electives			
Code	Title	Cr	Pre-req./Co-req.*
SWAE2201	Introduction to Soil and Water	3	FPEL(0560 or 0600 or 0601 or 0602 or 0603 or 0604)
Minor Electives			
SWAE3002	Desertification 84 Land Restoration	3	SWAE2201

SWAE3302	Environmental Soil Chemistry	3	CHEM2101 and SWAE2201
SWAE3304	Soil and Water Conservation	3	PHYS2101 and (SWAE2001 or SWAE2201)
SWAE3311	Environmental Soil Physics	3	PHYS2101 and (SWAE2001 or SWAE2201)
SWAE3411	Environmental Soil Microbiology	3	BIOL2101
SWAE4111	Hydrogeology for Soil-Water-Landscape Interactions	3	SWAE2201 and SWAE3303 and SWAE3311 and CR*
SWAE4401	Water and Nutrients in Soil-Plant Environments	3	SWAE2201 and CR*

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

For reference contact:

Dr. Charles Saki Bakheit

Ext. 1416

Approved by Dean of Science:

Prof. Salma Al-Kandiy

~~Dr. Charles Saki Bakheit~~

Date: 20/11/2016

Office of Admissions & Registration:

Confirmed:

