

Academic Programs Booklet

College of Science

2024



Prepared By: VP For Academic Programs and Graduate Studies Office

College of Science

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College of Science

List of B.Sc. Programs

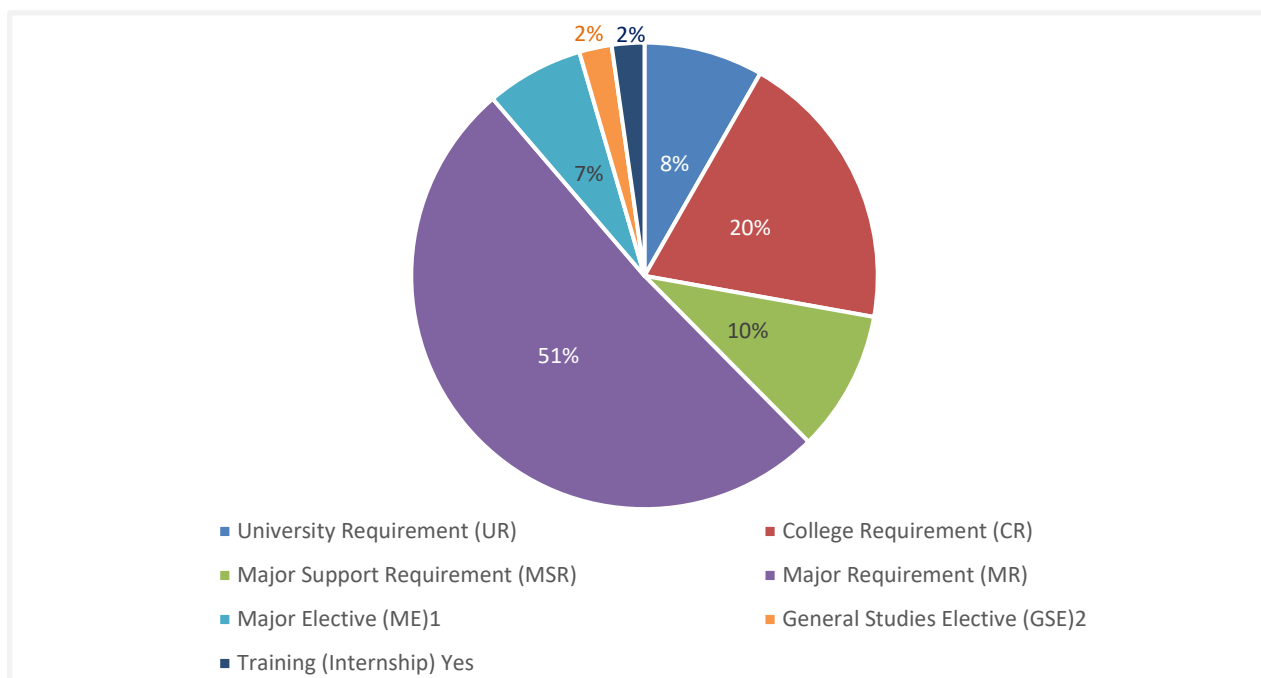
- 1- B.Sc. in Mathematics
- 2- B.Sc. in Actuarial Science
- 3- B.Sc. in Statistics and Data Science

List of College Requirement Courses

Course Code	Course Title	Course Hours			Course Type	Pre-requisite	Major GPA
		LEC	PRAC	CRD			
ENGL 125	English For Science I (SCI.)	3	0	3	CR	None	No
ENGL 126	English For Science II (SCI.)	3	0	3	CR	ENGL 125	No
ITCS 106	Computer Programming I	3	2	4	CR	None	No
MATHS 131	Calculus I	4	0	4	CR	None	No
PHYCS 101	General Physics I	3	2	4	CR	None	No
CHEMY 101	General Chemistry I	3	2	4	CR	None	No
BIOLS 102	General Biology I	3	2	4	CR	None	No
Total		22	8	26			

B.Sc. in Actuarial Science

Program Components



University Requirement (UR)	11
College Requirement (CR)	26
Major Support Requirement (MSR)	13
Major Requirement (MR)	68
Major Elective (ME) ¹	9
General Studies Elective (GSE) ²	3
Training (Internship) Yes	3
Total Credit (CRD)	133

Teaching Language: English

¹ Student must three courses from Major Elective (ME) List.

² Student must select one course from General Studies Electives (GSE).

Note:

- Free Elective Courses any UOB course excluding: (1) courses offered for special students, (2) courses covered in the B.Sc. curriculum, (3) courses equivalent or lower than those already taken in the curriculum and should not be a science course prepared by College of Science for other colleges.
- HU/SS Courses - Humanities and Social Science Component: Any course from the following:
Humanities: Fine Arts, History, American Studies, Classics, Communications, English, (Foreign Language) French, Music, Philosophy, Theatre, Literature (Arabic), Religion (comparative).
Social Science: Anthropology, Economics, Education, Geography, History, Psychology, Sociology, Women's Studies, Political Science.

Detailed Study Plan

Year 1 – Semester 1

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ENGL 125	English For Science I (SCI.)	3	0	3	CR	None	No
MATHS 131	Calculus I	4	0	4	CR	None	No
ITCS 106	Computer Programming I	3	2	4	CR	None	No
PHYCS 101	General Physics I	3	2	4	CR	None	No
HRLC 107	Human Rights	2	0	2	UR	None	No
Total		15	4	17			

Year 1 – Semester 2

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ENGL 126	English For Science II (SCI.)	3	0	3	CR	ENGL 125	No
MATHS 132	Calculus II	4	0	4	MR	MATHS 131	Yes
ITCS 107	Computer Programming II	3	2	4	MSR	ITCS 106	No
CHEMY 101	General Chemistry I	3	2	4	CR	None	No
STAT 271	Introduction to Probability	3	0	3	MR	MATHS 131	Yes
Total		16	4	18			

Year 2 – Semester 3

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ENGL 226	Scientific Report Writing	3	0	3	MSR	ENGL 126	No
MATHS 211	Linear Algebra	3	0	3	MR	MATHS 131	Yes
ECON 140	Microeconomics	3	0	3	MR	None	Yes
ACC 112	Financial Accounting I	3	0	3	MR	None	Yes
STAT 371	Probability and Statistics I	3	0	3	MR	MATHS 132 STAT 271	Yes
Total		15	0	15			

Year 2 – Semester 4

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
MATHS 233	Calculus III	4	0	4	MR	MATHS 132	Yes
MATHS 205	Differential Equations	3	0	3	MR	MATHS 132	Yes
ECON 141	Macroeconomics	3	0	3	MR	ECON 140	Yes
ACC 113	Financial Accounting II	3	0	3	MR	ACC 112	Yes
STAT 372	Probability and Statistics II	3	0	3	MR	STAT 371	Yes
Total		16	0	16			

Year 3 – Semester 5

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
BIOLS 102	General Biology I	3	2	4	CR	None	No
STAT 277	Statistics and Data Science I	2	2	3	MSR	STAT 271 ITCS 106	No
STAT 374	Regression Analysis	3	0	3	MR	STAT 372 MATHS 211	Yes
FIN 220	Financial Management I	3	0	3	MR	ACC 113	Yes
MATHS 371	Theory of Interest	3	0	3	MR	MATHS 132	Yes
Total		14	4	16			

Year 3 – Semester 6

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ITCS 214	Data Structures	3	0	3	MSR	ITCS 107	No
STAT 381	Time Series Analysis	3	0	3	MR	STAT 372	Yes
FIN 320	Financial Management II	3	0	3	MR	FIN 220	Yes
MATHS 373	Introduction to Actuarial Mathematics	3	0	3	MR	MATHS 371	Yes
MATHS/STAT xxx	Major Elective List 1	3	0	3	ME	As per ME List 1	Yes
Total		15	0	15			

Training Requirement

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
MATHS 397	Internship for Actuarial Science	0	6	3	MR- Training	Passes 75 credit hours	Yes
Total		0	6	3			

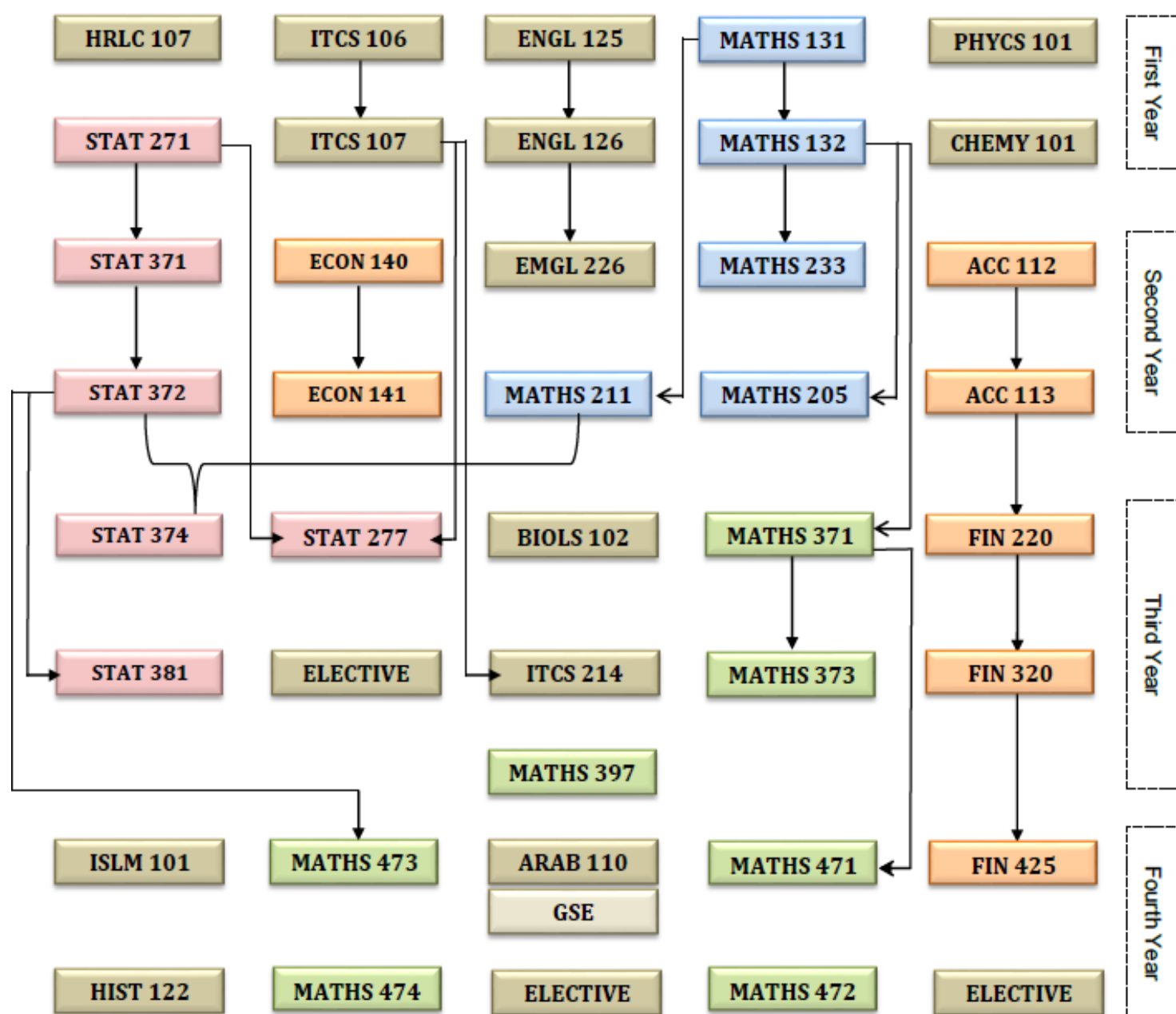
Year 4 – Semester 7

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
ISLM 101	Islamic Culture	3	0	3	UR	None	No
ARAB 110	Arabic Language Skills	3	0	3	UR	None	No
MATHS 471	Life Contingencies I	3	0	3	MR	MATHS 371	Yes
FIN 425	Corporate Finance	3	0	3	MR	FIN 320	Yes
MATHS 473	Loss Models I	3	0	3	MR	STAT 372	Yes
GSE xxx	Free Elective	3	0	3	GSE	None	No
Total		18	0	18			

Year 4 – Semester 8

Course Code	Course Title	Course Hours			Course Type	Pre requisite	Major GPA
		LEC	PRAC	CRD			
HIST 122	Modern History of Bahrain and Citizenship	3	0	3	UR	None	No
MATHS 472	Life Contingencies II	3	0	3	MR	MATHS 471	Yes
MATHS 474	Loss Models II	3	0	3	MR	MATHS 473	Yes
MATHS/STAT xxx	Major Elective List 1	3	0	3	ME	As per ME List 1	Yes
BUSINESS xxx	Major Elective List 2	3	0	3	ME	As per ME List 2	No
Total		15	0	15			

Flowchart of Study Plan



Major Elective Courses

Course Code	Course Title	Course Hours			Course Type	Pre-requisite	Major GPA
		LEC	PRAC	CRD			
MATHS 462	Partial Differential Equations	3	0	3	MR	MATHS 205 MATHS 233	Yes
STAT 377	Statistics and Data Science II	2	2	3	MR	STAT 277	Yes
STAT 384	Bayesian Inference	3	0	3	MR	STAT 371	Yes
STAT 471	Decision Theory	3	0	3	MR	STAT 372	Yes
STAT 473	Introduction to Multivariate Analysis	3	0	3	MR	STAT 372	Yes
FIN 424	Investment Management	3	0	3	MR	FIN 320	Yes
FIN 426	International Financial Management	3	0	3	MR	FIN 221	Yes
FIN 434	Financial Risk Management	3	0	3	MR	FIN 222	Yes
SBF 270	Islamic Banking and Finance	3	0	3	MR	FIN 220	Yes

General Studies Elective (GSE)

Course Code	Course Title	Course Hours			Course Type	Pre-Requisite
		LEC	PRAC	CRD		
ARAB 141	Modern Arabic Lit.	3	0	3	GSE	-----
ARAB 242	Arabic Poetry In The Renaissance Period	3	0	3	GSE	-----
ART 133	Fundamentals of Music and Its Appreciation	3	0	3	GSE	-----
ART 141	Drawing and Painting	2	1	3	GSE	-----
ART 221	Traditional Music of Bahrain and Its Application	3	0	3	GSE	-----
CHL 101	Introduction to Chinese Language	3	0	3	GSE	-----
CHL 102	Basic Chinese Language	3	0	3	GSE	CHL 101
EDAR 126	Playing on Piano and Org 1	3	0	3	GSE	-----
EDPS 144	Psychology of Learning and Memory	3	0	3	GSE	-----
EDTC 100	Teaching and Learning Technology	3	0	3	GSE	-----
ENGL 130	Introduction to Literature	3	0	3	GSE	-----
FREN 141	French I	3	0	3	GSE	-----
FREN 142	French II	3	0	3	GSE	FREN 141
GERM 101	Introduction to German	3	0	3	GSE	-----
HISTO 212	Contemporary History of The Arab World	3	0	3	GSE	-----
HISTO 281	Landmarks of Islamic Civilisation	3	0	3	GSE	-----
ISLM 114	Quranic Sciences	3	0	3	GSE	-----
ISLM 136	Biography of The Prophet	3	0	3	GSE	-----
ISLM 141	Introduction to Shari'A	3	0	3	GSE	-----
ISLM 252	Islamic Doctrine	3	0	3	GSE	-----
JAPN 101	Japanese Level I	3	0	3	GSE	-----
JAPN 102	Japanese Level II	3	0	3	GSE	JAPN 101
KL 101	Korean Language I	3	0	3	GSE	-----
KL 102	Korean Language II	3	0	3	GSE	KL 101
LAW 101	Introduction to Legal Studies	3	0	3	GSE	-----
LAW 102	History of Law	3	0	3	GSE	-----
LAW 106	Constitutional Law I	3	0	3	GSE	-----
PHEDE 214	Principles of Educational Statistics	3	0	3	GSE	-----
PSYC 103	Introduction to Psychology	3	0	3	GSE	-----
PSYC 120	Psychology of Marriage	3	0	3	GSE	-----
PSYC 211	Educational Psychology	3	0	3	GSE	-----

Course Code	Course Title	Course Hours			Course Type	Pre-Requisite
		LEC	PRAC	CRD		
PSYC 281	Thinking Skills	3	0	3	GSE	PSYC 103 or EDPS 241
SOCIO 161	Introduction to Sociology	3	0	3	GSE	-----
SOCIO 181	Introduction to Anthropology	3	0	3	GSE	-----
SOCIO 191	Citizenship, Identity and Globalization	3	0	3	GSE	-----
SOCIO 224	Sociology of Health	3	0	3	GSE	-----
SOCIO 226	Sociology of Arabian Gulf	3	0	3	GSE	-----
TL 101	Turkish Language	3	0	3	GSE	-----
SPAN 101	SPANISH I	3	0	3	GSE	-----
GSE XXX	Other Electives	X	X	E	GSE	Department Approval

Course Description

University Requirements Courses Descriptions

Course Code:	HRLC 107	Course Credits:	(2-0-2)	Course Title:	Human Rights
Course Description:	This course deals with the principles of human rights in terms of the definition of human rights, scope, sources with a focus on the International Bill of Human Rights; The Charter of the United Nations; Universal Declaration of Human Rights; The International Covenant on Economics, Social and Culture rights; Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment; Mechanics and the Constitutional Protection of Rights and Public Freedoms in Kingdom of Bahrain.				
Course Code:	HIST 122	Course Credits:	(3-0-3)	Course Title:	Modern History of Bahrain and Citizenship
Course Description:	Spatial identity of Bahrain: Brief history of Bahrain until the 18th century; the historical roots of the formation of the national identity of Bahrain since the 18th century; the modern state and evolution of constitutional life in Bahrain; the Arabic and Islamic dimensions of the identity of Bahrain; the core values of Bahrain's society and citizenship rights (legal, political, civil and economic); duties; responsibilities and community participation; economic change and development in Bahrain; Bahrain's Gulf, Arab and international relations.				
Course Code:	ARAB 110	Course Credits:	(3-0-3)	Course Title:	Arabic Language Skills
Course Description:	This course focuses on basic Arabic skills including form, function, and meaning. It also helps the student to appreciate and understand structures and approach them from a critical point of view, through various genres in literature.				
Course Code:	ISLM 101	Course Credits:	(3-0-3)	Course Title:	Islamic Culture
Course Description:	An introduction to the general outline and principles of Islamic culture, its general characteristics, its relationships with other cultures, general principles of Islam in beliefs, worship, legislation and ethics.				

College Requirement Courses Descriptions

Course Code:	ENGL 125	Course Credits:	(3-0-3)	Course Title:	English for Science I (SCI)
Course Description:	This is the first of two integrated language courses designed specifically for science majors. Special attention is given to scientific vocabulary and the unique features of technical writing. The course includes an extensive reading programme via a self-access lab.				
Course Code:	ENGL 126	Course Credits:	(3-0-3)	Course Title:	English for Science II (SCI)
Course Description:	English for Science is the second of two integrated language courses designed specifically for Science majors. Special attention is given to scientific vocabulary and the unique features of technical writing.				
Course Code:	ITCS 106	Course Credits:	(3-2-4)	Course Title:	Computer Programming I
Course Description:	This course introduces problem solving and fundamental programming concepts and techniques implemented by a high-level programming language. Topics include primitive and compound data types, syntax, semantics, expressions, assignment, input, output, conditional and iterative control structures, and functions.				
Course Code:	MATHS 131	Course Credits:	(4-0-4)	Course Title:	Calculus I
Course Description:	Limits, Derivatives of Algebraic and Transcendental Functions, Related Rates, the Mean Value Theorem, Graphing Techniques, Optimization, Integrals, and the Fundamental Theorem of Calculus.				
Course Code:	CHEMY 101	Course Credits:	(3-2-4)	Course Title:	General Chemistry I
Course Description:	Atomic structure; formulas and names of chemical molecules; Avogadro's number and the mole; stoichiometry of chemical reactions; acid-base and redox reactions, solutions, concentration units, and colligative properties; gases and gas laws; electronic structure and the electron configuration; periodic properties and chemical bonding: ionic and covalent; Lewis structures and formal charge; molecular geometry and hybridization. Related practical work.				
Course Code:	PHYCS 101	Course Credits:	(3-2-4)	Course Title:	General Physics I
Course Description:	Units and Measurements. Brief Review of Vectors. Newton's Laws of Motion. Projectile Motion. Work and Energy. Impulse and Momentum. Rotational Dynamics. Equilibrium of a Rigid Body. Periodic Motion.				
Course Code:	BIOLS 102	Course Credits:	(3-2-4)	Course Title:	General Biology I
Course Description:	Properties of life; atoms, molecules, and chemical bonds; biomolecules; cell structure and function; bioenergetics (intermediary metabolism); cell reproduction; Mendelian genetics; structure of DNA; RNA and protein synthesis; molecular genetics.				

Major Requirement Courses Descriptions

Course Code:	MATHS 132	Course Credits:	(4-0-4)	Course Title:	Calculus II
Course Description:	Applications of Definite Integrals, L'Hopital's Rule, Integration Techniques, Infinite Series, Taylor and Maclaurin Series, Parametric Equations and Polar Coordinates.				
Course Code:	MATHS 233	Course Credits:	(4-0-4)	Course Title:	Calculus III
Course Description:	Vectors. Vector-valued functions. Partial differentiation. Optimization. Multiple integrals, Change of variables, line and surface integrals, Green's and Stokes' theorems.				
Course Code:	MATHS 205	Course Credits:	(3-0-3)	Course Title:	Differential Equations
Course Description:	Differential equations of first order and their solution. Separable and exact equations. Equations convertible to separable type. Higher order linear equations with constant coefficients (homogeneous and nonhomogeneous). Variation of parameters. Laplace transform technique. Applications of differential equations.				
Course Code:	MATHS 211	Course Credits:	(3-0-3)	Course Title:	Linear Algebra
Course Description:	Fields. Vector Spaces. Linear Dependence and Independence. Bases. Dimensions. Subspaces. Quotient Spaces. Linear Transformations. Connection with Matrices. Change of Bases (PAQ and PAP). Eigen-Values. Characteristic Polynomial. Minimal Polynomial. Canonical Forms in Simple Cases. Real and Complex Inner-Product Spaces. Orthonormal Bases. Orthogonal and Complex Unitary Matrices and their Eigen-Values. Orthogonal and Unitary Reduction of Real Symmetric and Complex Hermitian Matrices.				
Course Code:	MATHS 371	Course Credits:	(3-0-3)	Course Title:	Theory of Interest
Course Description:	Introduction to the mathematics of interest and the evaluation of interest related products including annuities with Non-contingent payments, loans, bonds, general cash flows, portfolios, and immunization.				
Course Code:	MATHS 373	Course Credits:	(3-0-3)	Course Title:	Introduction to Actuarial Mathematics
Course Description:	Option pricing fundamentals; Key characteristics of life insurance policy, long-term health coverage, pension, and survival models; Market Risk Measures; Basic actuarial quantities for some loss distributions.				
Course Code:	MATHS 471	Course Credits:	(3-0-3)	Course Title:	Life Contingencies I
Course Description:	This course introduces students to the mathematical theory of contingencies. Topics include survival distributions, individual risk models, life tables, life insurance valuation.				
Course Code:	MATHS 472	Course Credits:	(3-0-3)	Course Title:	Life Contingencies II
Course Description:	This course is a continuation of the study of life contingencies. Topics include benefit reserve, multiple life functions, multiple decrement models, life annuity pricing, premium calculation, and policy value.				
Course Code:	MATHS 473	Course Credits:	(3-0-3)	Course Title:	Loss Models I
Course Description:	This course introduces students to the construction and evaluation of actuarial models. Topics include measures of risk, characteristics of actuarial models, severity models, frequency models and aggregate loss models.				
Course Code:	MATHS 474	Course Credits:	(3-0-3)	Course Title:	Loss Models II
Course Description:	This course is a continuation of the study of actuarial models. Topics include estimation of data, parameter estimation, model selection, and credibility.				

Course Code:	MATHS 397	Course Credits:	(0-6-3)	Course Title:	Internship for Actuarial Science
Course Description:	The Internship course is designed to provide an opportunity to gain work experience related to the student's specified field of science, in a supervised workplace environment for a period of 8 consecutive weeks. The student shall submit a report upon completion.				
Course Code:	STAT 271	Course Credits:	(3-0-3)	Course Title:	Introduction to Probability
Course Description:	Descriptive Statistics. Sample spaces. Probability functions. Conditional probability. Independence. Combinatorics. Random variables and their distributions. Distribution functions. Geometric, binomial, Poisson and other discrete distributions. Uniform, normal and other continuous distributions. Some limit theorems.				
Course Code:	STAT 371	Course Credits:	(3-0-3)	Course Title:	Probability and Statistics I
Course Description:	Random variables and probability distributions. Moment generating Functions. Joint Probability distributions. Normal, gamma, Chi square and other distributions. Central Limit Theorem.				
Course Code:	STAT 372	Course Credits:	(3-0-3)	Course Title:	Probability and Statistics II
Course Description:	Point and interval estimation. Sampling distributions. t-, Chi-square and F-distributions. Test of hypotheses. Likelihood ratio test. Neyman-Pearson lemma. Correlation and regression.				
Course Code:	STAT 374	Course Credits:	(3-0-3)	Course Title:	Regression Analysis
Course Description:	Simple linear regression. Multiple linear regression. Analysis of residuals. Multicollinearity. Biased estimation. Sensitivity analysis. Selection of Variables. Non-linear regression. Response surface and correlation analysis.				
Course Code:	STAT 381	Course Credits:	(3-0-3)	Course Title:	Time Series Analysis
Course Description:	Introduction to linear and stationary time series. Autocorrelation modeling. Autoregression modeling. Moving average. ARMA models. ARIMA models. Introduction to spectral analysis of a time series. Introduction to non-linear time series.				
Course Code:	ECON 140	Course Credits:	(3-0-3)	Course Title:	Microeconomics
Course Description:	Introduction to economic concepts, the economic way of thinking, decision-making, the study of scarcity, opportunity cost, how prices are determined and why they change, factors determining cost and the nature of costs, and how firms, under different market conditions, make price and output decisions in short run and long run.				
Course Code:	ECON 141	Course Credits:	(3-0-3)	Course Title:	Macroeconomics
Course Description:	The study of the determination and systematic movement of broad aggregates such as total output, national economic growth, unemployment and inflation. How macroeconomic policies such as fiscal and monetary policies affect the economic aggregates. The measurement of macroeconomic variables, unemployment, determinants of real GDP and price level, fiscal policy, money, banking and monetary policy.				
Course Code:	ACC 112	Course Credits:	(3-0-3)	Course Title:	Financial Accounting I
Course Description:	A survey of the accounting cycle; recording changes in financial position; ledger; journal; trial balance; income measurement; adjusting and closing entries; accounting for merchandising operations; special journals and subsidiary ledgers; accounting for cash; receivables; inventories; plant and equipment.				
Course Code:	ACC 113	Course Credits:	(3-0-3)	Course Title:	Financial Accounting II
Course Description:	Accounting for partnerships and corporations: capital stock; dividends and retained earnings; long term liabilities and investment; statement of changes in financial position; cash flows, analysis and interpretation of financial statements, manufacturing accounts.				
Course Code:	FIN 220	Course Credits:	(3-0-3)	Course Title:	Financial Management I
Course Description:	Functions of finance, legal and tax environments, role of financial markets, compound interest and present value, theory of financial valuation, basics of capital budgeting, financial analysis and planning, working capital management, short-term financing.				

Course Code:	FIN 320	Course Credits:	(3-0-3)	Course Title:	Financial Management II
Course Description:	Detailed analysis of capital budgeting under conditions of uncertainty: cost of capital, capital structure, dividend policy, long-term financing, capital markets, investment banking, common stocks, preferred stocks, debt instruments, leasing, convertibles, mergers and acquisitions, introduction to international finance, small company finance, and failure and reorganization.				
Course Code:	FIN 425	Course Credits:	(3-0-3)	Course Title:	Corporate Finance
Course Description:	Case applications of basic financial concepts, recent empirical and theoretical findings in the field of corporate finance. Financial analysis and planning, capital expenditure analysis, capital structure and dividend policies, corporate structure and restructuring, mergers and acquisitions, financial restructuring, and international corporate equity offerings.				

Major Support Requirement Courses Descriptions

Course Code:	ITCS 107	Course Credits:	(3-2-4)	Course Title:	Computer Programming II
Course Description:	This course covers key concepts of object-oriented programming. Topics include object-oriented design, encapsulation, event handlers, memory management, arrays, exception handlers, searching algorithms, programming applications.				
Course Code:	ITCS 214	Course Credits:	(3-0-3)	Course Title:	Data Structure
Course Description:	This course covers data structures and their implementations in an object-oriented programming language. Topics include sub-typing, abstract base class, lists, stacks, queues, trees, graphs, hash tables, strategies for choosing appropriate data structure.				
Course Code:	STAT 277	Course Credits:	(2-2-3)	Course Title:	Statistics and Data Science I
Course Description:	Introduction to R and Python (software installation, libraries, scripts), Computational and Programming Skills, Data Types (static, temporal, spatial), Data Structures (lists, vectors, matrices, frames), Data Science Process (Problem Understanding, Data Acquisition and Processing, Modelling, Deployment).				
Course Code:	ENGL 226	Course Credits:	(3-0-3)	Course Title:	Scientific Report Writing
Course Description:	This course aims to enable students in the College of Science to write professional and academic reports (between 2000-3000 words) related to their areas of specialization and intended work. It also deals with vocabulary and language structures essential for producing a full-length formal research report.				

Major Elective List 1

Course Code:	MATHS 462	Course Credits:	(3-0-3)	Course Title:	Partial Differential Equations
Course Description:	First order partial differential equations, method of characteristics, linear second order partial differential equations, classifications, maximum principles, boundary and initial value problem for potential, wave, and heat equations.				
Course Code:	STAT 377	Course Credits:	(2-2-3)	Course Title:	Statistics and Data Science II
Course Description:	Statistical Inference, Parameter Estimation, Hypothesis Testing, Confidence Intervals, Simulation and Resampling, Continuous and Categorical Data, Linear and Nonlinear Regressions, Logistic Regression.				
Course Code:	STAT 384	Course Credits:	(3-0-3)	Course Title:	Bayesian Inference
Course Description:	Bayes Theorem. Prior and posterior distributions. Loss and risk functions. Baye's risk. Bayesian estimation of parameters of Binomial, Poisson, geometric, gamma, beta and normal distributions. Bayesian intervals. Bayesian procedures for testing hypothesis. Bayesian analysis of linear models.				
Course Code:	STAT 471	Course Credits:	(3-0-3)	Course Title:	Decision Theory
Course Description:	Elements of Decision problems. Risk profiles. Sensitivity analysis. Modeling uncertainty. Probability assessment. Value of Information. Risk attitudes. Expected utility. Utility models and sequential decisions.				
Course Code:	STAT 473	Course Credits:	(3-0-3)	Course Title:	Introduction to Multivariate Analysis
Course Description:	Aspects of multivariate analysis. Matrix algebra and random vectors. Sample geometry and random sampling. The multivariate normal distribution. Inference about a mean vector. Comparisons of several multivariate means. Principal components. Factor analysis and inference for structured covariance matrices. Discrimination and classification. Clustering.				

Major Elective List 2

Course Code:	FIN 424	Course Credits:	(2-2-3)	Course Title:	Investment Management
Course Description:	Securities markets, sources of investment information, bond valuation, stock valuation, convertibles and warrants, investment strategies, portfolio theory and asset valuation, and market efficiency hypotheses.				
Course Code:	FIN 426	Course Credits:	(2-2-3)	Course Title:	International Financial Management
Course Description:	This course covers issues related to both international financial markets and the financial operations of the firm within the international environment. Management of currency risk and political risk of multinational companies will be discussed. Evaluation of international projects and raising money in global markets along with optimal management of corporate funds internally in differential tax environment will be discussed.				
Course Code:	FIN 434	Course Credits:	(3-0-3)	Course Title:	Financial Risk Management
Course Description:	Risk management process, identification and evaluation of loss exposures, analysis of various risk control and financing techniques available to manage exposures, decision making under conditions of uncertainty, and control mechanisms to monitor the results of a risk management program. Case studies, computer simulation.				
Course Code:	SBF 270	Course Credits:	(3-0-3)	Course Title:	Islamic Banking and Finance
Course Description:	Principles of Islamic banking, alternatives of interest-free banking; application of alternative methods of investment; a comparative study of conventional banking; current issues and future of Islamic banking; structure of the industry; regulation of Islamic banks; accounting standards for Islamic banking; role of Islamic banks in the development of an economy and challenges facing Islamic banks.				