DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE UNIVERSITY OF GHANA UNDERGRADUATE STUDENTS' HANDBOOK

SINGLE MAJOR IN STATISTICS

ENTRY REQUIREMENT: STAT 111, STAT 112, MATH 121MATH 122, MATH 126

| FIRST SEMESTER | | | | |
|--|--|--|------------------------------|--|
| Course Code | Course Title | Credits | Pre-requisite(s) | |
| UGRC210/ | Academic Writing II/ Introduction to | 3 | Fre-requisite(s) | |
| UGRC 220 | African Studies | 3 | | |
| | | 3 | MATH1111 100 100 | |
| STAT 221 | Introductory Probability I | | MATH121,122, 126 | |
| STAT 223 | Elementary Statistical Methods | 3 |) (A TEXT 100 | |
| MATH 223 | Calculus II | 3 | MATH 122 | |
| *STAT 240 | Introduction to Statistical Computing | 3 | | |
| Total | | 15 | | |
| | Electives (3-6 Credits) | | T | |
| ACTU 203 | Introduction to Financial Mathematics I | 3 | | |
| *STAT 220 | Introduction to Actuarial Science | 1 | | |
| *STAT 230 | Data Mining | 3 | | |
| Total Credits | | | 18-21 | |
| | | | | |
| Course Code | SECOND SEMESTER Course Title | Credits | Pre-requisite(s) | |
| Course Code CBAS 210/ | Course Title | Credits 3 | Pre-requisite(s) | |
| CBAS 210/ | | | Pre-requisite(s) | |
| | Course Title Academic Writing II/ Introduction to African Studies | | Pre-requisite(s) | |
| CBAS 210/ UGRC 220 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time | 3 | Pre-requisite(s) | |
| CBAS 210/ UGRC 220 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series Analysis | 3 | Pre-requisite(s) STAT 221 | |
| CBAS 210/ UGRC 220 STAT 222 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time | 2 | | |
| CBAS 210/ UGRC 220 STAT 222 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series Analysis Introductory Probability II | 3 2 3 | | |
| CBAS 210/ UGRC 220 STAT 222 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series Analysis Introductory Probability II Official Statistics | 3 2 3 2 | | |
| CBAS 210/ UGRC 220 STAT 222 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series Analysis Introductory Probability II | 3 2 3 2 | | |
| CBAS 210/ UGRC 220 STAT 222 STAT 224 STAT 226 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series Analysis Introductory Probability II Official Statistics Electives (6-9 Credits) Introduction to Financial Mathematics | 3 2 3 2 10 | STAT 221 | |
| CBAS 210/ UGRC 220 STAT 222 STAT 224 STAT 226 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series Analysis Introductory Probability II Official Statistics Electives (6-9 Credits) Introduction to Financial Mathematics II | 3 2 3 2 10 | STAT 221 | |
| CBAS 210/ UGRC 220 STAT 222 STAT 224 STAT 226 ACTU 204 *STAT 220 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series Analysis Introductory Probability II Official Statistics Electives (6-9 Credits) Introduction to Financial Mathematics II Introduction to Actuarial Sciences | 3 2 3 2 10 | STAT 221 ACTU 203 | |
| CBAS 210/ UGRC 220 STAT 222 STAT 224 STAT 226 ACTU 204 *STAT 220 MATH 224 | Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series Analysis Introductory Probability II Official Statistics Electives (6-9 Credits) Introduction to Financial Mathematics II Introduction to Actuarial Sciences Introduction to Abstract Algebra Introduction to Non-Parametric Statistics | 3 2 3 2 10 3 | STAT 221 ACTU 203 MATH 126 | |
| CBAS 210/ UGRC 220 STAT 222 STAT 224 STAT 226 ACTU 204 *STAT 220 MATH 224 STAT 228 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series Analysis Introductory Probability II Official Statistics Electives (6-9 Credits) Introduction to Financial Mathematics II Introduction to Actuarial Sciences Introduction to Abstract Algebra | 3 2 3 2 10 3 1 3 3 | STAT 221 ACTU 203 MATH 126 | |

^{*}STAT 220, STAT 230 and STAT 240 could be taken in the first semester or the second semester.

| | FIRST SEMESTER | | |
|----------------------|-------------------------------------|---------|------------------|
| Course Code | Course Title | Credits | Pre-requisite(s) |
| STAT 331 | Probability Distributions | 3 | STAT 221, 224 |
| STAT 333 | Statistical Inference I | 3 | STAT 224 |
| STAT 335 | Sampling Survey Methods | 3 | |
| MATH351/STAT | Linear Algebra/Methods of Linear | 3 | MATH 224/ |
| 339 | Algebra | | MATH 126 |
| Total | | 12 | |
| Electives (Select 6- | -9 Credits) | | |
| ACTU 301 | Life Contingency I | 3 | ACTU 204 |
| STAT 337 | Introduction to Operations Research | 3 | |
| MATH 353 | Analysis I | 3 3 | MATH 223 |
| MATH 355 | Calculus of Several Variables | | |
| MATH 359 | Discrete Mathematics | 3 | MATH 224 |
| Total Credit | | | 18-21 |
| | SECOND SEMESTER | | |
| Course Code | Course Title | Credits | Pre-requisite(s) |
| STAT 332 | Multivariate Distributions | 3 | STAT 331 |
| STAT 334 | Statistical Inference II | 3 | STAT 333 |
| STAT 336 | Design of Experiments | 3 | STAT 223 |
| MATH 350 | Differential Equations I | 3 | MATH 122, 223 |
| Total | | 12 | |
| Electives (Select 6- | -9 Credits) | | |
| DCIT 308 | Data Structures and Algorithm II | 3 | DCIT 204 |
| ACTU 332 | Life Contingency II | 3 | ACTU 301 |
| STAT 338 | Decision Theory | 3 | |
| MATH 356 | Analysis II | 3 | MATH 223 |
| Total Credit | | | 18-21 |

| FIRST SEMESTER | | | | |
|----------------|------------------------------|---------|------------------|--|
| Course Code | Course Title | Credits | Pre-requisite(s) | |
| STAT 443 | Theory of Sampling | 3 | STAT 335 | |
| STAT 445 | Advanced Regression Analysis | 3 | STAT 334 | |

| STAT 450 | Project | 3 | |
|---|------------------------------------|---------|------------------|
| STAT 461 | Bayesian Statistics | 3 | STAT 224 |
| Total | | 12 | |
| | | · | |
| | | | |
| Electives (Sele | | | |
| STAT 440 | Business Statistics | 3 | STAT 222,203 |
| STAT 447 | Non –Parametric Statistics | 3 | STAT 228 |
| STAT 451 | Random Processes | 3 | STAT 331 |
| STAT 453 | Population Statistics | 3 | |
| STAT 459 | Statistical Quality Control | 3 | |
| STAT 455 | Actuarial Statistics I | 3 | STAT 331 |
| STAT 457 | Economic and Social Statistics I | 3 | STAT 226 |
| MATH 441 | Advanced Calculus | 3 | MATH 353 |
| MATH 445 | Introductory Functional Analysis | 3 | MATH 356 |
| Total credits | • | | 18-21 |
| | | | |
| | SECOND SEMESTER | | |
| Course Code | Course Title | Credits | Pre-requisite(s) |
| STAT 444 | Survey Organisation and Management | 3 | STAT 335 |
| STAT 466 | Discrete Data Analysis | 3 | |
| STAT 450 | Project | 3 | |
| Total | - | 9 | |
| | | | |
| Electives(Selec | ct 9-12 Credits) | | |
| STAT 442 | Applied Times Series Analysis | 3 | |
| MATH 422 | Integration Theory and Measure | 3 | MATH 356 |
| STAT 446 | Multivariate Methods | 3 | STAT 332 |
| STAT 448 | Analysis of Experimental Design | 3 | STAT 335 |
| MATH 450 | Differential Equation II | 3 | MATH 350 |
| STAT 464 | Statistical Computing with R | 3 | STAT 240 |
| STAT 454 | Biometrics | 3 | STAT 331 |
| STAT 456 | Actuarial Statistics II | 3 | STAT 455, 453 |
| | Economic and Social Statistics II | 3 | STAT 457 |
| STAT 458 | | | - 1111 IUI |
| STAT 458 STAT 462 | | | |
| STAT 458 STAT 462 Total Credit | Biostatistics | 3 | 18-21 |

MAJOR- MINOR IN STATISTICS LEVEL 200

| Course Code Course Title Credits Pre-requisite(s) | LEVEL 200 | | | |
|--|---------------------|--------------------------------------|---------|------------------|
| *CBAS 210/ UGRC 220 African Studies STAT 221 Introductory Probability I STAT 223 Elementary Statistical Methods STAT 230 Data Mining AACADEMIC 230 Total Total Total Credit SECOND SEMESTER **Course Code** **Course Title** **Course Title** **Course Code** **Course Title** **Credits** **Pre-requisite(s)** **Te-requisite(s)** **Te-requisite(s)** **Introduction to Regression and Time** **Series Analysis** **STAT 222** Introductory Probability II **STAT 224** Introductory Probability II **STAT 226** **STAT 230** **Data Mining** **STAT 221* **Total** **Introductory Probability II **STAT 230** **Data Mining** **STAT 221* **Total** **Introductory Probability II **STAT 230** **Data Mining** **STAT 221* **Total** **Introductory Probability II **STAT 222* **Introduction to Actuarial Science** **Introduction to Actuarial Science** **Introduction to Non-Parametric** **STAT 228** Introduction to Non-Parametric** **STAT 220** **STAT 220** **Introduction to Non-Parametric** **STAT 220** **STAT 220** **Introduction to Non-Parametric** **STAT 220** **STAT 220** **Introduction to Non-Parametric** **STAT 220** **STAT 220* **ST | | FIRST SEMESTER | _ | T |
| UGRC 220 | | | | Pre-requisite(s) |
| STAT 221 | *CBAS 210/ | Academic Writing II/Introduction to | 3 | |
| STAT 122 | UGRC 220 | African Studies | | |
| STAT 223 Elementary Statistical Methods 3 STAT 230 Data Mining 3 STAT 121, 122 MATH 223 Calculus II 3 MATH 121 Total | STAT 221 | Introductory Probability I | 3 | MATH 121, |
| STAT 230 | | | | STAT 122 |
| MATH 223 Calculus II 3 MATH 121 Total 15 18-21 SECOND SEMESTER SECOND SEMESTER Course Code Course Title Credits Pre-requisite(s) UGRC210/ UGRC 220 Academic Writing II/ Introduction to 3 African Studies 2 1 2 1 1 3 STAT 222 STAT 222 Introduction to Regression and Time Series Analysis 2 5 2 5 3 STAT 221 5 3 STAT 221 5 3 STAT 221 5 3 STAT 221 5 3 STAT 121, 122 1 | STAT 223 | Elementary Statistical Methods | | |
| Total 15 Total Credit Take 6 credit from the Minor Department 18 -21 SECOND SEMESTER Course Code Course Title Credits Pre-requisite(s) UGRC 210/ UGRC 220 Academic Writing II/ Introduction to 3 African Studies 2 STAT 222 Introduction to Regression and Time Series Analysis 2 STAT 221 3 STAT 221 STAT 226 Official Statistics 2 STAT 221 Total 3 STAT 121, 122 3 STAT 121, 122 Total 13 Total 13 STAT 220 Introduction to Actuarial Science 1 STAT 223 STAT 228 Introduction to Non-Parametric Statistics 3 STAT 223 STAT 223 STAT 240 Statistical Computing 3 STAT 230 STAT 223 STAT 240 Statistical Computing 3 STAT 223 STAT 223 STAT 223 STAT 223 STAT 224 STAT 224 STAT 224 STAT 224 STAT 224 STAT 225 STAT 225 STAT 226 STAT 227 STAT 228 STAT 226 STAT 227 STAT 228 STAT 229 STAT 229 <t< td=""><td>STAT 230</td><td>Data Mining</td><td></td><td>STAT 121, 122</td></t<> | STAT 230 | Data Mining | | STAT 121, 122 |
| Total Credit Take 6 credit from the Minor Department 18 -21 SECOND SEMESTER Course Code Course Title Credits Pre-requisite(s) UGRC 210/ UGRC 220 Academic Writing II/ Introduction to African Studies 3 STAT 222 Introduction to Regression and Time Series Analysis 2 STAT 221 STAT 224 Introductory Probability II 3 STAT 221 STAT 230 Data Mining 3 STAT 121, 122 Total 13 STAT 220 Introduction to Actuarial Science 1 STAT 228 Introduction to Non-Parametric Statistics 3 STAT 223 STAT 240 Statistical Computing 3 STAT 223 | MATH 223 | Calculus II | 3 | MATH 121 |
| Department | Total | | 15 | |
| SECOND SEMESTER Course Code Course Title Credits Pre-requisite(s) UGRC 210/ UGRC 220 Academic Writing II/ Introduction to African Studies 3 2 STAT 222 Introduction to Regression and Time Series Analysis 2 3 STAT 221 STAT 224 Introductory Probability II 3 STAT 221 STAT 226 Official Statistics 2 2 STAT 230 Data Mining 3 STAT 121, 122 Total 13 13 Electives(0-4 Credits) STAT 220 Introduction to Actuarial Science 1 STAT 228 Introduction to Non-Parametric Statistics 3 STAT 223 STAT 240 Statistical Computing 3 | Total Credit | Take 6 credit from the Minor | | 18 -21 |
| Course CodeCourse TitleCreditsPre-requisite(s)UGRC210/ UGRC 220Academic Writing II/ Introduction to African Studies3STAT 222Introduction to Regression and Time Series Analysis2STAT 224Introductory Probability II3STAT 221STAT 226Official Statistics2STAT 230Data Mining3STAT 121, 122Total13Electives(0-4 Credits)STAT 220Introduction to Actuarial Science1STAT 228Introduction to Non-Parametric Statistics3STAT 223STAT 240Statistical Computing3 | | Department | | |
| Course CodeCourse TitleCreditsPre-requisite(s)UGRC210/ UGRC 220Academic Writing II/ Introduction to African Studies3STAT 222Introduction to Regression and Time Series Analysis2STAT 224Introductory Probability II3STAT 221STAT 226Official Statistics2STAT 230Data Mining3STAT 121, 122Total13Electives(0-4 Credits)STAT 220Introduction to Actuarial Science1STAT 228Introduction to Non-Parametric Statistics3STAT 223STAT 240Statistical Computing3 | | | | |
| Course CodeCourse TitleCreditsPre-requisite(s)UGRC210/ UGRC 220Academic Writing II/ Introduction to African Studies3STAT 222Introduction to Regression and Time Series Analysis2STAT 224Introductory Probability II3STAT 221STAT 226Official Statistics2STAT 230Data Mining3STAT 121, 122Total13Electives(0-4 Credits)STAT 220Introduction to Actuarial Science1STAT 228Introduction to Non-Parametric Statistics3STAT 223STAT 240Statistical Computing3 | | SECOND SEMESTER | 1 | |
| UGRC 220 African Studies STAT 222 Introduction to Regression and Time Series Analysis STAT 224 Introductory Probability II STAT 226 STAT 230 Data Mining STAT 230 Data Mining STAT 220 Introduction to Actuarial Science STAT 220 Introduction to Non-Parametric STAT 228 STAT 228 STAT 240 Statistics STAT 240 Statistical Computing 3 STAT 223 STAT 223 STAT 223 STAT 223 STAT 223 | | SECOND SEIVESTER | | |
| UGRC 220African StudiesSTAT 222Introduction to Regression and Time Series Analysis2STAT 224Introductory Probability II3STAT 221STAT 226Official Statistics2STAT 230Data Mining3STAT 121, 122TotalElectives(0-4 Credits)STAT 220Introduction to Actuarial Science1STAT 228Introduction to Non-Parametric Statistics3STAT 223STAT 240Statistical Computing3 | Course Code | | Credits | Pre-requisite(s) |
| UGRC 220African StudiesSTAT 222Introduction to Regression and Time Series Analysis2STAT 224Introductory Probability II3STAT 221STAT 226Official Statistics2STAT 230Data Mining3STAT 121, 122TotalElectives(0-4 Credits)STAT 220Introduction to Actuarial Science1STAT 228Introduction to Non-Parametric Statistics3STAT 223STAT 240Statistical Computing3 | UGRC210/ | Academic Writing II/ Introduction to | 3 | - |
| Series Analysis STAT 224 Introductory Probability II STAT 226 Official Statistics STAT 230 Data Mining 3 STAT 121, 122 Total Introduction to Actuarial Science STAT 220 Introduction to Non-Parametric STAT 228 Introduction to Non-Parametric Statistics STAT 240 Statistical Computing 3 STAT 223 | UGRC 220 | African Studies | | |
| Series Analysis STAT 224 Introductory Probability II STAT 226 Official Statistics STAT 230 Data Mining 3 STAT 121, 122 Total Introduction to Actuarial Science STAT 220 Introduction to Non-Parametric STAT 228 Introduction to Non-Parametric Statistics STAT 240 Statistical Computing 3 STAT 223 | STAT 222 | Introduction to Regression and Time | 2 | |
| STAT 226 Official Statistics 2 STAT 230 Data Mining 3 STAT 121, 122 Total 13 Electives(0-4 Credits) STAT 220 Introduction to Actuarial Science 1 STAT 228 Introduction to Non-Parametric 3 STAT 223 Statistics STAT 240 Statistical Computing 3 | | | | |
| STAT 230 Data Mining 3 STAT 121, 122 Total 13 Electives (0-4 Credits) STAT 220 Introduction to Actuarial Science 1 STAT 228 Introduction to Non-Parametric 3 STAT 223 Statistics STAT 240 Statistical Computing 3 | STAT 224 | Introductory Probability II | | STAT 221 |
| Total Electives(0-4 Credits) STAT 220 Introduction to Actuarial Science 1 STAT 228 Introduction to Non-Parametric 3 STAT 223 Statistics STAT 240 Statistical Computing 3 | STAT 226 | Official Statistics | 2 | |
| Electives (0-4 Credits) STAT 220 Introduction to Actuarial Science 1 STAT 228 Introduction to Non-Parametric 3 STAT 223 Statistics STAT 240 Statistical Computing 3 | STAT 230 | Data Mining | 3 | STAT 121, 122 |
| STAT 220Introduction to Actuarial Science1STAT 228Introduction to Non-Parametric Statistics3STAT 223STAT 240Statistical Computing3 | Total | - | 13 | |
| STAT 220Introduction to Actuarial Science1STAT 228Introduction to Non-Parametric Statistics3STAT 223STAT 240Statistical Computing3 | | | | |
| STAT 228 Introduction to Non-Parametric 3 STAT 223 Statistics 3 STAT 240 Statistical Computing 3 | | Electives(0-4 Credits) | • | |
| Statistics STAT 240 Statistical Computing 3 | STAT 220 | Introduction to Actuarial Science | 1 | |
| Statistics STAT 240 Statistical Computing 3 | STAT 228 | Introduction to Non-Parametric | 3 | STAT 223 |
| STAT 240 Statistical Computing 3 | | | | |
| | STAT 240 | | 3 | |
| | | | 3 | MATH 126 |
| | | | | |
| Total Credit Take 6 credit from the Minor 19-20 | Total Credit | Take 6 credit from the Minor | | 19-20 |
| Department | | Department | | |

^{*}STAT 220, STAT 230 and STAT 240 could be taken in the first semester or the second semester.

| FIRST SEMESTER | | | | |
|------------------------------|--|-------------|-----------------------|--|
| Course Code | Course Title | Credits | Pre-requisite(s) | |
| STAT 331 | Probability Distributions | 3 | STAT 221, 224 | |
| STAT 333 | Statistical Inference I | 3 | STAT 224 | |
| STAT 335 | Sample Survey Methods | 3 | | |
| MATH351/ STAT339 | Linear Algebra/Methods of Linear Algebra | 3 | MATH 224/ MATH 126 | |
| Total | | 12 | | |
| Total Credit | Take 6 credit from the Minor Department | | 15-18 | |
| Students minor in Course. | Mathematics must take MATH 351 and any o SECOND SEMESTER | iner Core I | лаіпетанся | |
| Course Code | Course Title | Credits | Pre-requisite(s) | |
| STAT 332 | Multivariate Distributions | 3 | STAT 331 | |
| STAT 334 | Statistical Inference II | 3 | STAT 333 | |
| STAT 336 | Design of Experiments | 3 | STAT 223 | |
| | Besign of Emperiments | | | |
| Total | Design of Emperation | 9 | | |
| | Elective(3-6 Credits) | 9 | | |
| | | 3 | | |
| Total | Elective(3-6 Credits) | | | |

Total Credits

| FIRST SEMESTER | | | | |
|-----------------|------------------------------|---------|------------------|--|
| Course Code | Course Title | Credits | Pre-requisite(s) | |
| STAT 443 | Theory of Sampling | 3 | STAT 335 | |
| STAT 461 | Bayesian Statistics Methods | 3 | STAT 224 | |
| STAT 445 | Advanced Regression Analysis | 3 | STAT 334 | |
| STAT 450 | Project | 3 | | |
| Total | | 12 | | |
| | | | | |
| Electives(Selec | t 6-9 Credits) | | | |
| STAT 440 | Business Statistics | 3 | STAT 222,203 | |
| STAT 447 | Non-Parametric Statistics | 3 | | |
| STAT 451 | Random Processes | 3 | STAT 331 | |
| STAT 453 | Population Statistics | 3 | STAT 453 | |

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| STAT 455 | Actuarial Statistics I | 3 | STAT 331 |
|--------------|------------------------------------|---------|------------------|
| | | | |
| STAT 457 | Economic and Social Statistics I | 3 | STAT 226 |
| STAT 459 | Statistical Quality Control | 3 | |
| Total credit | | | 18-21 |
| | SECOND SEMESTER | | |
| Course Code | Course Title | Credits | Pre-requisite(s) |
| STAT 444 | Survey Organization and Management | 3 | |
| STAT 466 | Discrete Data Analysis | 3 | |
| STAT 450 | Project | 3 | |
| Total | | 9 | |
| | Electives (Select 9-12 Credits) | | |
| STAT 442 | Applied Time Series Analysis | 3 | |
| MATH 422 | Integration Theory and Measure | 3 | MATH 356 |
| STAT 446 | Multivariate Methods | 3 | STAT 332 |
| STAT 448 | Analysis of Experimental Design | 3 | |
| MATH 450 | Differential Equation II | 3 | |
| STAT 454 | Biometrics | 3 | STAT 331 |
| STAT 456 | Actuarial Statistics II | 3 | STAT 455, 453 |
| STAT 458 | Economic and Social Statistics II | 3 | STAT 447 |
| STAT 462 | Biostatistics | 3 | |
| STAT 464 | Statistical Computing with R | 3 | STAT 240 |
| Total credit | | | 18-21 |

COMBINED MAJOR IN STATISTICS

LEVEL 200

| FIRST SEMESTER | | | |
|--|---|---|--|
| Course Title | Credits | Pre-requisite(s) | |
| Academic Writing II/ Introduction to African | 3 | | |
| Studies | | | |
| Introductory Probability I | 3 | MATH 121, | |
| | | MATH | |
| | | 122 | |
| Elementary Statistical Methods | 3 | | |
| Calculus II | 3 | MATH 121 | |
| Data Mining | 3 | | |
| | 15 | | |
| | | 21 | |
| | Course Title Academic Writing II/ Introduction to African Studies Introductory Probability I Elementary Statistical Methods Calculus II | Course TitleCreditsAcademic Writing II/ Introduction to African Studies3Introductory Probability I3Elementary Statistical Methods3Calculus II3Data Mining3 | |

Note: Non-mathematics combinations are not required to take STAT 230

SECOND SEMESTER

| Course Code | Course Title | Credits | Pre-requisite(s) |
|---------------------|--|---------|------------------|
| UGRC210/ | Academic Writing II/ Introduction to African | 3 | |
| UGRC 220 | Studies | | |
| STAT 222 | Introduction to Regression and Time series | 2 | |
| STAT 224 | Introductory Probability II | 3 | STAT 221, |
| | | | MATH 223 |
| STAT 226 | Official Statistics | 2 | |
| Total | | 10 | |
| Total Credit | | | 19 |

LEVEL 300

| FIRST SEMESTER | | | |
|----------------------|----------------------------------|---------|------------------|
| Course Code | Course Title | Credits | Pre-requisite(s) |
| STAT 331 | Probability Distributions | 3 | STAT 221, 204 |
| STAT 333 | Statistical Inference I | 3 | STAT 224 |
| STAT 335 | Sample Survey Methods | 3 | |
| MATH351/STAT339 | Linear Algebra/Methods of Linear | 3 | MATH 224/ |
| | Algebra | | MATH 126 |
| Total | | 12 | |
| Total credit | | | 18-21 |
| Note: STAT 339 for N | Non-Mathematics Combinations | | |

SECOND SEMESTER

| Course Code | Course Title | Credits | Pre-requisite(s) | | | |
|--------------|-------------------------------------|---------|------------------|--|--|--|
| STAT 332 | Multivariate Distributions | 3 | STAT 331 | | | |
| STAT 334 | Statistical Inference II | 3 | STAT 333 | | | |
| STAT 336 | Design of Experiments | 3 | STAT 223 | | | |
| Total | | 9 | | | | |
| | Elective (Select 0-3 Credit) | | | | | |
| ACTU 302 | Introduction to Actuarial Computing | 3 | | | | |
| STAT 338 | Decision Theory | 3 | | | | |
| Total credit | | | 18-21 | | | |

| | FIRST SEMESTER | | |
|-------------------|------------------------------------|---------|------------------|
| Core Courses | | | |
| Course Code | Course Title | Credits | Pre-requisite(s) |
| STAT 443 | Theory of Sampling | 3 | STAT 335 |
| STAT 445 | Advanced Regression Analysis | 3 | STAT 334 |
| Total | | 6 | |
| Electives (Select | t 3-6 Credits) | · | |
| STAT 440 | Business Statistics | 3 | STAT 222,203 |
| STAT 447 | Non-Parametric Statistics | 3 | STAT 333, 304 |
| STAT 450 | Project | 3 | |
| STAT 451 | Random Processes | 3 | STAT 331 |
| STAT 453 | Population Statistics | 3 | |
| STAT 455 | Actuarial Statistics I | 3 | STAT 331 |
| STAT 457 | Economic and Social Statistics I | 3 | STAT 226 |
| STAT 459 | Statistical Quality Control | 3 | STAT 459 |
| STAT 461 | Bayesian Statistics Methods | 3 | STAT 224 |
| Total credit | | | 18-21 |
| | SECOND SEMESTER | | |
| Course Code | Course Title | Credits | Pre-requisite(s) |
| STAT 444 | Survey Organization and Management | 3 | STAT 335 |
| Total | | 3 | |
| | Electives(Select 6-9 Credits) | | |
| STAT 446 | Multivariate Methods | 3 | STAT 332 |
| STAT 448 | Analysis of Experimental design | 3 | STAT336 |
| STAT 450 | Project | 3 | |
| STAT 454 | Biometrics | 3 | STAT 331 |
| STAT 456 | Actuarial Statistics II | 3 | STAT 455, 453 |
| STAT 458 | Economic and Social Statistics II | 3 | STAT 447 |
| STAT 464 | Statistical Computing with R | 3 | STAT 222, 233 |
| STAT 466 | Discrete Data Analysis | 3 | |
| Total Credit | | | 18-21 |

MINOR IN STATISTICS

LEVEL 200

| FIRST SEMESTER | | | |
|------------------------------------|---|-----------|----------------------------|
| Course Code | Course Title | Credits | Pre-requisite(s) |
| *UGRC 210/ | Academic Writing II/ Introduction to African | 3 | |
| UGRC 220 | Studies | | |
| STAT 221 | Introductory Probability I | 3 | MATH 121, |
| | | | 122 |
| STAT 223 | Elementary Statistical Methods | 3 | |
| Total | | 9 | |
| | | | |
| | SECOND SEMESTER | | |
| Course Code | Course Title | Credits | Pre-requisite(s) |
| *UGRC 210/ | Course Title Academic Writing II/ Introduction to African | Credits 3 | Pre-requisite(s) |
| | Course Title Academic Writing II/ Introduction to African Studies | | Pre-requisite(s) |
| *UGRC 210/ | Course Title Academic Writing II/ Introduction to African | | Pre-requisite(s) |
| *UGRC 210/ UGRC 220 | Course Title Academic Writing II/ Introduction to African Studies | 3 | Pre-requisite(s) |
| *UGRC 210/ UGRC 220 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series | 3 | Pre-requisite(s) STAT 221 |
| *UGRC 210/ UGRC 220 STAT 222 | Course Title Academic Writing II/ Introduction to African Studies Introduction to Regression and Time Series Analysis | 3 | |

| FIRST SEMESTER | | | | |
|--|---|-------------|------------------|--|
| Course Code | Course Title | Credits | Pre-requisite(s) | |
| STAT 333 | Statistical Inference I | 3 | STAT 224 | |
| STAT331/ | Probability Distribution | 3 | | |
| STAT 335 | Sample Survey Methods | | | |
| Total | | 6 | | |
| | Electives(0-3 Credits) | | | |
| STAT 337 | Introduction to Operation Research | 3 | | |
| | SECOND SEMESTER | | | |
| | SECOND SEMESTER | | | |
| Course Code | Course Title | Credits | Pre-requisite(s) | |
| STAT 334 | Course Title Statistical Inference II | 3 | STAT 333 | |
| | Course Title | | | |
| STAT 334 | Course Title Statistical Inference II | 3 | STAT 333 | |
| STAT 334 STAT 332/ | Course Title Statistical Inference II Multivariate Distributions | 3 | STAT 333 | |
| STAT 334 STAT 332/ STAT 336 | Course Title Statistical Inference II Multivariate Distributions | 3 3 | STAT 333 | |
| STAT 334 STAT 332/ STAT 336 | Course Title Statistical Inference II Multivariate Distributions Design of Experiments | 3 3 | STAT 333 | |
| STAT 334 STAT 332/ STAT 336 Total | Course Title Statistical Inference II Multivariate Distributions Design of Experiments Elective(0-3 Credits) | 3 3 6 | STAT 333 | |

BSC. IN ACTUARIAL SCIENCE

MAJOR IN ACTUARIAL SCIENCE

LEVEL 200 (ENTRY REQUIREMENT: MATH 121, MATH 126, STAT 111, STAT 112, ECONS 101, ECONS 102, and MATH 122)

First Semester

| Course Code | Course Title | Credits | Pre-requisite(s) |
|------------------|---|---------|------------------|
| Core | | | |
| UGRC 210 | Academic Writing II | 3 | |
| STAT 201 | Introductory Probability I | 3 | MATH 121, |
| | | | STAT |
| | | | 122 |
| ACTU 203 | Introduction to Financial Mathematics I | 3 | |
| MATH 223 | Calculus II | 3 | |
| STAT 223 | Elementary Statistical Methods | 3 | |
| Total | | 15 | |
| Electives (Selec | t 3 – 6 Credits) | | |
| *STAT 240 | Introduction Statistical Computing | 3 | |
| ECON 201 | Elements of Economics I | 3 | |
| STAT 220 | Introduction to Actuarial Science | 1 | |
| MATH 225 | Vector Mechanics | 3 | MATH 122 |
| Total credit | | | 18-21 |

| Course Code | Course Title | Credits | Pre-requisite(s) |
|------------------|---|---------|------------------|
| Core | | | |
| UGRC 220 | Introduction to African Studies | 3 | |
| ACTU 204 | Introduction to Financial Mathematics II | 3 | |
| STAT 224 | Introductory Probability II | 3 | STAT 221 |
| MATH 224 | Introductory Abstract Algebra | 3 | |
| MATH 220 | Introductory Computational Mathematics | 3 | MATH 122 |
| Total | | 15 | |
| Electives (Selec | t 3 – 6 Credits) | | |
| ECON 202 | Elements of Economics II | 3 | |
| DCIT 204 | Data Structures and Algorithm I | 3 | |
| STAT 222 | Introduction to Regression and Times Series | 2 | |
| | Analysis | | |

| STAT 230 | Data Mining | 3 | |
|--------------|-------------|---|-------|
| Total credit | | | 17-21 |

First Semester

| Course Code | Course Title | Credits | Pre-requisite(s) | | |
|------------------|--|---------|------------------|--|--|
| Core | | | | | |
| STAT 331 | Probability Distributions | 3 | STAT 224 | | |
| MATH 351/ | Linear Algebra/Methods of Linear Algebra | 3 | MATH 224/ | | |
| STAT 339 | | | MATH 126 | | |
| ACTU 301 | Life Contingencies I | 3 | ACTU 204 | | |
| FINC 301 | Introduction to Business Finance | 3 | | | |
| MATH 355 | Calculus of Several Variables | 3 | MATH 223 | | |
| STAT 333 | Statistical Inference I | 3 | | | |
| Total | | 18 | | | |
| Electives (Selec | t 0-3 Credits) | | | | |
| MATH 359 | Discrete Mathematics | 3 | | | |
| STAT 335 | Sample Survey Methods | 3 | | | |
| MATH 353 | Analysis I | 3 | MATH 223 | | |
| ACTU 320 | Internship in Actuarial Science (either 1st or | 1 | | | |
| | 2 nd Semester) ** | | | | |
| ACTU 335 | Microeconomic Theory for Actuaries I | 3 | | | |
| ACTU 359 | Risk Management and Insurance | 3 | | | |
| Total credit | | | 18-21 | | |

^{**} To be taken during vacation

| Course Code | Course Title | Credits | Pre-requisite(s) |
|------------------|-------------------------------------|---------|------------------|
| Core | | | |
| STAT 332 | Multivariate Distributions | 3 | STAT 331, MATH |
| | | | 331 |
| ACTU 304 | Life Contingencies II | 3 | |
| MATH 350 | Differential Equations I* | 3 | MATH 223 |
| ACTU 302 | Introduction to Actuarial Computing | 3 | |
| STAT 334 | Statistical Inference II | 3 | STAT 333 |
| Total | | 15 | |
| Electives (Selec | et 3 – 6 Credit) | | |
| CSCD 314 | Operations Research | 3 | |
| MATH 354 | Abstract Algebra I** | 3 | MATH 224 |
| MATH 356 | Analysis II | 3 | MATH 223 |
| MATH 358 | Computational Mathematics I | 3 | |

| ACTU 334 | Microeconomic Theory for Actuaries II | 3 | |
|--------------|--|---|-------|
| FINC 352 | Principles and Practice of Insurance | 3 | |
| STAT 338 | Decision Theory | 3 | |
| STAT 356 | Life Insurance and Retirement Security | 3 | |
| Total credit | | | 18-21 |

First Semester

| Course Code | Course Title | Credits | Pre-requisite(s) | | |
|------------------|--|---------|--------------------|--|--|
| Core | | | | | |
| ACTU 410 | Project | 3 | | | |
| ACTU 405 | Fundamentals of Financial Accounting I | 3 | | | |
| ACTU 409 | Loss Distributions & Actuarial Risk Measures | 3 | | | |
| ACTU 453 | Introduction to Non-Life Insurance | 3 | | | |
| | Mathematics I | | | | |
| ACTU 407 | Financial Economics I | 3 | | | |
| Total | | 15 | | | |
| Electives (Selec | t 3 – 6 credits) | | | | |
| STAT 457 | Economic and Social Statistics I | 3 | | | |
| STAT 445 | Advanced Regression Analysis | 3 | STAT 334, MATH 335 | | |
| ACTU 445 | Macroeconomic Theory for Actuaries I | 3 | | | |
| STAT 443 | Population Statistics | 3 | | | |
| STAT 451 | Random Processes | 3 | STAT 331 | | |
| MATH 441 | Advanced Calculus | 3 | MATH 351 or | | |
| | | | MATH 353 | | |
| MATH 445 | Introductory Functional Analysis | 3 | MATH 356 | | |
| ACTU 441 | Econometrics for Actuaries I | 3 | | | |
| MATH 447 | Complex Analysis | 3 | MATH 223 | | |
| STAT 459 | Statistical Quality Control | 3 | | | |
| STAT 440 | Business Statistics | 3 | | | |
| Total credit | | | 18-21 | | |

| Course Code | Course Title | Credits | Pre-requisite(s) | |
|------------------|-------------------------------------|---------|------------------|--|
| Core | | | | |
| ACTU 410 | Project | 3 | | |
| ACTU 412 | Fundamental Financial Accounting II | 3 | | |
| ACTU 454 | Introduction to Non-life Insurance | 3 | | |
| | Mathematics II | | | |
| ACTU 408 | Financial Economics II | 3 | ACTU204, | |
| | | | STAT 331,STAT332 | |
| ACTU 404 | Pensions and Social Security | 3 | | |
| Total | | 15 | | |
| Electives (Selec | Electives (Select 3 – 6 Credits) | | | |
| MATH 442 | Differential Equation II | 3 | | |

| ACTU 448 | Macroeconomic Theory for Actuaries II | 3 | |
|--------------|---------------------------------------|---|-------|
| STAT 442 | Applied Time Series Analysis | | |
| FINC 458 | Health Insurance | 3 | |
| STAT 458 | Economic and Social Statistics II | 3 | |
| ACTU 442 | Econometrics for Actuaries II | 3 | |
| FINC 452 | Property and Pecuniary Insurance | 3 | |
| Total credit | | | 18-21 |

COMBINED MAJOR IN ACTUARIAL SCIENCE

BSc/BA. ACTUARIAL SCIENCE AND MATHEMATICS LEVEL 200(ENTRY REQUIREMENT: MATH 121, MATH 126, STAT 111, STAT 112, MATH 122)

First Semester

| Course Code | Course Title | Pre-requisite(s) | |
|------------------|---|------------------|-------|
| Core | | | |
| UGRC 210 | Academic Writing II | 3 | |
| STAT 221 | Introductory Probability I | 3 | MATH |
| ACTU 203 | Introduction to Financial Mathematics I | 3 | |
| MATH 223 | Calculus II | 3 | |
| Total | | 12 | |
| Electives (Selec | t 0-3 Credits) | | |
| STAT 223 | Elementary Statistical Methods | 3 | |
| STAT 240 | Introduction Statistical Computing | 3 | |
| ECON 201 | Elements of Economics I | 3 | |
| Total credit | | | 18-21 |

| Course Code | Course Title | Credits | Pre-requisite(s) |
|------------------|--|---------|------------------|
| Core | | | |
| UGRC 220 | Introduction to African Studies | 3 | |
| ACTU 204 | Introduction to Financial Mathematics II | 3 | ACTU 203 |
| STAT 224 | Introductory Probability II | 3 | STAT 221 |
| MATH 224 | Introductory Abstract Algebra | 3 | |
| MATH 220 | Introductory Computational Mathematics | 3 | MATH 122 |
| Total | | 15 | |
| Electives (Selec | t 3 Credits) | | |
| ECON 202 | Elements of Economics II | 3 | |
| DCIT 204 | Data Structures and Algorithm I | 3 | |
| STAT 222 | Introduction to Regression and Time Series | 2 | |

| STAT 230 | Data Mining | 3 | |
|--------------|-------------|---|----|
| Total credit | | | 21 |

First Semester

| Course Code | Course Title | Credits | Pre-requisite(s) |
|-------------|----------------------------------|---------|------------------|
| Core | | | |
| STAT 331 | Probability Distributions | 3 | STAT 221, 224 |
| MATH 351 | Linear Algebra | 3 | MATH 224 |
| ACTU 301 | Life Contingencies I | 3 | ACTU 204 |
| FINC 301 | Introduction to Business Finance | 3 | |
| MATH 355 | Calculus of Several Variables | 3 | MATH 223 |
| MATH 353 | Analysis I | 3 | |
| STAT 333 | Statistical Inference I | 3 | STAT 223 |
| Total | | 21 | |

Second Semester

| Course Code | Course Title | Credits | Pre-requisite(s) | | |
|-----------------------------|-------------------------------------|---------|------------------|--|--|
| Core | | | | | |
| STAT 332 | Multivariate Distributions | 3 | STAT 331, MATH | | |
| | | | 331 | | |
| ACTU 304 | Life Contingencies II | 3 | | | |
| MATH 350 | Differential Equations I* | 3 | MATH 223 | | |
| ACTU 302 | Introduction to Actuarial Computing | 3 | | | |
| MATH 356 | Analysis II | 3 | MATH 223 | | |
| STAT 334 | Statistical Inference II | 3 | | | |
| Total | | 18 | | | |
| Electives (Select 3 Credit) | | | | | |
| MATH 354 | Abstract Algebra I | 3 | | | |
| MATH 358 | Computational Mathematics I | 3 | MATH 220 | | |
| Total credit | | | 21 | | |

LEVEL 400

First Semester

| Course Code | Course Title | Credits | Pre-requisite(s) |
|-------------|--|---------|------------------|
| Core | | | |
| ACTU 403 | Introduction to Non-Life Insurance | 3 | |
| | Mathematics I | | |
| ACTU 405 | Fundamentals of Financial Accounting I | 3 | |
| ACTU 407 | Financial Economics I | 3 | |
| ACTU 409 | Loss Distributions & Actuarial Risk Measures | 3 | |
| MATH 441 | Advanced Calculus | 3 | |
| Total | | 15 | |

| Electives (Select 6 credits) | | | |
|------------------------------|----------------------------------|---|----|
| MATH 445 | Introductory Functional Analysis | 3 | |
| MATH 447 | Complex Analysis | 3 | |
| Total credit | | | 21 |

| Course Code | Course Title | Credits | Pre-requisite(s) |
|------------------|--|---------|------------------|
| Core | | | |
| ACTU 404 | Pensions and Social Security | 3 | |
| ACTU 412 | Fundamental Financial Accounting II | 3 | |
| MATH 442 | Integration and Measure Theory | 3 | MATH 356 |
| ACTU 444 | Introduction Non-life Insurance Mathematics II | 3 | ACTU 443 |
| Total | | 12 | |
| Electives (Selec | t 6-9 Credits) | | |
| MATH 450 | Differential Equation II | 3 | MATH 350 |
| MATH 460 | Fourier Series | 3 | |
| MATH 446 | Module Theory | 3 | |
| MATH 440 | Abstract Algebra II | 3 | |
| MATH 458 | Mathematical Biology | 3 | |
| MATH 444 | Calculus on Manifolds | 3 | |
| MATH 448 | Special Relativity | 3 | |
| STAT 442 | Applied Time Series Analysis | 3 | |
| STAT 446 | Multivariate Methods | 3 | |
| Total credit | | | 18-21 |
| | | | |
| | | | |
| | | | |