ACTUARIAL SCIENCE (ACTS)

ACTS 0--. ACTS-LOWER DIVISION. (1-10 Credits)
Lower Level Coursework in Actuarial Science
Level: Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions: None
Primary grade mode: Transfer
Schedule type(s): Lecture
Area(s) of Inquiry: None

ACTS V--. ACTUARIAL SCIENCE. (3 Credits)
Level: Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions: None
Primary grade mode: Transfer
Schedule type(s): Lecture
Area(s) of Inquiry: None

ACTS 1--. ACTS-UPPER DIVISION. (1-10 Credits)
Upper Level Coursework in Actuarial Science
Level: Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions: None
Primary grade mode: Transfer
Schedule type(s): Lecture
Area(s) of Inquiry: None

ACTS 050. INTRODUCTION TO ACTUARIAL SCIENCE. (0 Credits)
This course will provide an overview of the actuarial science program at Drake University and of the professional exams of the various credentialing societies. During the course, students will be exposed to the different types of jobs and functions that actuaries perform. Guest speakers will be included from the Des Moines area insurance community and will lead discussions on topics of their expertise. Case studies will be incorporated to demonstrate actuarial concepts.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions:
Enrollment limited to students with a classification of Freshman.

Primary grade mode: Credit/No Credit
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 120. THEORY OF INEREST. (3 Credits)
Measurement of interest; solution of interest problems; basic and general annuities; yield rates; amortization schedules and sinking funds; bonds; yield curves; duration + immunization; stochastic approaches.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 070
Corequisite(s): ACTS 120L
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 120L. THEORY OF INTEREST LAB. (0.5 Credits)
Lab to accompany ACTS 120, providing further practice with actuarial science problems.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): ACTS 120
Restrictions: None
Primary grade mode: Credit/No Credit
Schedule type(s): Independent Study, Lab, Web Instructed
Area(s) of Inquiry: None

ACTS 131. INTRODUCTION TO PROBABILITY I. (3 Credits)
An introduction to probability concepts; including definition of probability; independence; conditional probability; random variables; specific discrete and continuous probability distributions; multivariate random variables; moments and moment generating functions; functions of random variables; sampling distributions and central limit theorem.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): MATH 070
Corequisite(s): ACTS 131L
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 131L. INTRODUCTION TO PROBABILITY I LAB. (0.5 Credits)
Lab to accompany ACTS 131, providing further practice with actuarial problems.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): ACTS 131
Restrictions: None
Primary grade mode: Credit/No Credit
Schedule type(s): Independent Study, Lab, Web Instructed
Area(s) of Inquiry: None

ACTS 135. MATHEMATICAL STATISTICS. (3 Credits)
This course will provide the basic concepts of sampling, estimation, confidence intervals, hypothesis testing.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): ACTS 131 or MATH 131
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 140. STATISTICS FOR RISK MODELING. (3 Credits)
Statistics for Risk Modeling' provides an introduction to methods and models used for analyzing data. Students will learn regression models (including GLMs: Generalized Linear Models), time series models, principal components analysis, decision trees, and cluster analysis. They will also apply methods for selecting and validating models. This course builds on introductory topics from probability (ACTS 131) and mathematical statistics (ACTS 135). ACTS 140 is a companion course to the STAT 170/172 sequence. However, this course is more purely mathematical/theoretical (and thus, good preparation for SOA Exam SRM), whereas the existing STAT courses are more applied / computer-based.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): ACTS 135
Corequisite(s): None
Restrictions:
Enrollment limited to students with a classification of Junior, Sophomore or Senior.

Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 150. LIFE INSURANCE MATHEMATICS I. (3 Credits)
Present value determination for life insurances and annuities; benefit premiums and reserves.
Level: Graduate, Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): (ACTS 140 or ACTS 120) and (STAT 131 or ACTS 131 or MATH 131) and MATH 080
Corequisite(s): ACTS 150L
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 150L. LIFE INSURANCE MATH I LAB. (0.5 Credits)
This 0.5 credit hour lab is a co-requisite to ACTS 150. It is intended to give students the opportunity to review and apply concepts learned in ACTS 150.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): ACTS 150
Restrictions: None
Primary grade mode: Credit/No Credit
Schedule type(s): Independent Study, Lab, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 155. LIFE INSURANCE MATHEMATICS II. (3 Credits)
This course is based on the learning objectives set by the professional examination ""Long-Term Actuarial Mathematics"" given by the Society of Actuaries (SOA). This course will introduce students to fundamentals in life insurance.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): ACTS 150
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 161. SHORT-TERM ACTUARIAL MATH I. (3 Credits)
This course is the first in a two-course sequence on material relating to short-term actuarial mathematics. During the course, students will learn statistical modeling procedures for both the frequency of claim counts and the severity of claim amounts. They will also be exposed to methods relating to the pricing and reserving of short-term insurance coverage, with includes P&C, health, and group lines of business. They will apply concepts from their prior probability-based class when modeling insurance claims, and will learn methods to adjust for coverage modifications (e.g., deductibles, policy limits, coinsurance, and inflation).
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): ACTS 131
Corequisite(s): ACTS 161L
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 161L. SHORT-TERM ACTUARIAL MATH I LAB. (0.5 Credits)
This 0.5 credit hour lab is a co-requisite to ACTS 161. It is intended to give students the opportunity to review and apply concepts learned in ACTS 161.
Level: Non Degree Coursework, Undergraduate
Prerequisite(s): None
Corequisite(s): ACTS 161
Restrictions: None
Primary grade mode: Credit/No Credit
Schedule type(s): Independent Study, Lab, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 165. SHORT-TERM ACTUARIAL MATH II. (3 Credits)
This course is the second in a two-course sequence on material relating to short-term actuarial mathematics. During the course, students will learn statistical modeling procedures for both the frequency of claim counts and the severity of claim amounts. They will also be exposed to methods relating to the pricing and reserving of short-term insurance coverage, which includes P&C, health, and group lines of business. They will apply concepts from their two prior probability-based classes when modeling insurance claims using both frequentist and Bayesian frameworks, while also learning credibility methods.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): ACTS 161 or ACTS 132 or ACTS 135
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 198. TOPICS IN ACTUARIAL SCIENCE. (0-3 Credits)
Timely or innovative course in actuarial science. Not scheduled regularly.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): ACTS 161
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Lab, Lecture, Web Instructed
Area(s) of Inquiry: None

ACTS 199. INDEPENDENT STUDY. (1-6 Credits)
Individual advanced study and research under faculty supervision.
Level: Non Degree Coursework, Professional Health Care, Undergraduate
Prerequisite(s): None
Corequisite(s): None
Restrictions: None
Primary grade mode: Standard Letter
Schedule type(s): Independent Study, Web Instructed
Area(s) of Inquiry: None