

SPAN 462**Hispanic Language and Culture for Foreign-Language Teachers II. [3]**

The course seeks to enhance advanced communication skills in Spanish through study of authentic current usage. Coursework will include examining written and oral texts, film and video for examples of current linguistic practice, reading relevant articles on pedagogy and developing lesson plans for application to the teacher's foreign-language classroom. Open only to foreign-language teachers. **Note:** May be taken concurrently with SPAN 461. **Prerequisite:** Permission of instructor.

SPAN 471**Topics in Spanish Society (L). [3]**

Topics to be announced each semester offered. Consult Schedule of Classes for full description of specific topics. May be repeated for credit. Among the offerings: post-Franco Spain, the Spanish Civil War, modernization and tradition, nationalism and regionalism. **Prerequisite:** SPAN 302, 307 and one other 300-level course, or permission of the instructor.

SPAN 472**Topics in Latin-American Society (L). [3]**

Topics to be announced each semester offered. Consult Schedule of Classes for full description of specific topics. Among the offerings are Caribbean culture, colonial Latin America, contemporary Mexico, the Latin-American diaspora in the United States and women in politics in Latin America. **Note:** May be repeated for credit. **Prerequisite:** SPAN 302, 308 and one other 300-level course, or permission of the instructor.

Speech

Speech courses are offered by the Department of English.

SPCH 100**Public Communication. [3]**

Preparation and practice in forms of oral communication. Emphasis is upon formal speaking in small-group and public address formats. Units to include selection of materials, organization, outlining, word choice, delivery and development of simple visual aids, and listening skills.

SPCH 210**Interpersonal Communication. [3]**

Study in one-to-one and small-group communication process and theory. Emphasis is placed on how the individual relates to others on verbal and nonverbal levels in task and social relationships. Attention is given to such units as self and personality, semantics, kinesics, proxemics, disclosure theory, conflict and group problem-solving.

SPCH 220**Small-Group Communication. [3]**

Small-group communication is designed for students wishing to strengthen communication skills in various small-group situations. Theory, practice and analysis are combined as students participate in discussion and task-oriented groups. The class is interdisciplinary in focus, and topics cover a range of issues. The class involves some field work in business, community and political settings. Video taping is used to allow students to observe themselves in the group interaction.

SPCH 301**Methods of Teaching Speech and Drama in the Secondary Schools. [3]**

See EDUC 309.

Statistics**STAT 121****Introduction to Statistics for the Social Sciences (MS). [4]**

Introduction to statistical methods common to social science applications. Topics include descriptive statistics, elementary probability theory, concepts of sampling and principles of statistical inference.

Prerequisite: A suitable score on LRC algebra Placement Exam. Not open to students who have passed a higher level of statistics course with a grade of "C" or better.

STAT 290**Special Topics in Statistics. [1-4]****STAT 299****Independent Study in Statistics. [1-4]**

Prerequisite: Permission of instructor.

STAT 350**Statistics With Applications in the Biological Sciences (MS). [4]**

Organization and presentation of data, summary of descriptive measures, probability, binomial and normal distributions, sampling natural populations and the estimation of population parameters, hypothesis testing, chi-square analysis, experimental designs and the analysis of variance, linear regression and correlation, and non-parametric statistics. Students will be introduced to statistical computing. All the statistical procedures will be illustrated using data from biology and the health sciences. **Note:** Not open to students who have passed or are concurrently taking STAT 351, 355, 356, 453 or CMPE 320. This course does not satisfy the statistics requirement for computer science majors and does not qualify as part of the mathematics major or minor. **Prerequisite:** MATH 150 or placement into 151 placement.

STAT 351**Applied Statistics for Business and Economics (MS). [4]**

Organization and presentation of data, summary of descriptive measures, probability, binomial, normal distributions and Pareto distribution, estimation of population parameters, sampling distributions, hypothesis testing, chi-square analysis, analysis of variance, linear regression and correlation, index numbers, time series analysis and forecasting. Students will be introduced to statistical computing. All the statistical procedures will be illustrated using data from management, business and economics. **Note:** Not open to students who have passed or are concurrently taking STAT 350, 355, 356, 453 or CMPE 320. This course does not satisfy the statistics requirement for computer science majors and does not qualify as part of the mathematics major or minor. **Prerequisite:** MATH 150 or 155.

STAT 355**Introduction to Probability and Statistics for Scientists and Engineers. [4]**

An introduction to applied statistics designed for science majors and others with demonstrated quantitative ability. Topics include nature of statistical methods, random variables and their distribution functions, general principles of estimation and hypothesis testing. A laboratory introduces students to computer techniques in statistical analysis. **Note:** Not open to students who have passed with a grade of "C" or better or who concurrently are taking STAT 350, 351, 356 or 453 or CMPE 320. **Recommended:** CMSC 203. **Prerequisite:** MATH 142 or 152.

STAT 356**Probability, Statistics and Random Processes. [3]**

This course presents the fundamental concepts of probability, statistics and random processes from a computer and electrical engineering perspective, emphasizing applications in communications and signal processing. Students will learn the basics to analyze and model the probabilistic behavior of engineering systems and to analyze experimental data associated with such systems. **Prerequisites:** MATH 225, 251 and ENEE 206. Credit will be given for only one of STAT 350, 351, 355, 356 or CMPE 320. Credit will not be given after or concurrent with STAT 453.

STAT 405**Survey Sampling. [3]**

Sampling versus total enumeration, planning of sample surveys, simple random sampling, stratified sampling, systematic sampling, cluster sampling, double and multistage sampling, variance estimation, problem of non-response and practical case studies. **Prerequisite:** STAT 453.

STAT 414**Environmental Statistics. [3]**

The purpose of this course is to study statistical methods used in environmental applications. This course includes a brief review of the basic methods of inference for percentiles, means and differences in mean with special emphasis on non-parametric methods, which are used widely in environmental applications. The course will cover the following topics: analysis of variance, estimation of components of variance and regression methodology using environmental data. Methods of analyzing data with observations that are below detection limits. Parametric and non-parametric methods of estimating trends in seasonal and autocorrelated data. Sampling methods that are particularly useful in environmental applications will be discussed. **Prerequisite:** Permission of the instructor or one of the following: STAT 350, 351, 355 or 451.

STAT 417**Introduction to Time Series Data Analysis. [3]**

Concepts in time series analysis, such as stationarity; some commonly used time series models, such as autoregressive moving average models, are introduced using examples. Time series data analysis tools, namely, auto-correlation function (ACF), partial autocorrelation function (PACF), detrending, differencing and forecasting will be discussed using real data sets. Some selected topics from time series modeling, such as transfer function models and intervention models, will be discussed. Data analysis using statistical software such as SPLUS will be an integral part of the course. **Note:** Approved by the Society of Actuaries to satisfy its Validation by Educational Experience (VEE) in Applied Statistical Methods. **Prerequisite:** STAT 355 or 453.

STAT 418**Applied Multivariate Methods. [3]**

Topics include multiple regression, partial and multiple correlations, the multi-variate normal distribution, statistical inference for mean vector and covariance matrix, multi-variate analysis of variance, principal components, canonical correlations, discriminant analysis, factor analysis and cluster analysis use of statistical packages. **Prerequisites:** STAT 453 and MATH 221.

STAT 419**Introduction to Biostatistics. [3]**

Topics include an introduction to statistics used in epidemiologic studies and clinical trials, measures of association, logistic regression, co-variate adjustment, introductory life table analysis, Cox regression, randomization techniques, ethics in human experimentation and statistical analysis using SAS. **Prerequisite:** STAT 454.

STAT 420**Statistics for Bioinformatics. [3]**

This course surveys the statistical methodology underlying current bioinformatics techniques. Topics to be covered include: dynamic programming, including the Needleman-Wunsch algorithm and Smith-Waterman algorithm; methods of inference, including maximum likelihood and Bayesian approach; Markov models, including Markov chains, hidden Markov models and inferences for these models; Monte-Carlo Markov chain methods, including Gibbs sampling and Metropolis-Hastings algorithm; extreme-value theory, including Gumbel distribution and significance of alignments; cluster analysis, including hierarchical methods, K-means method and determination of number of clusters; classification methods, including CART algorithm and QUEST algorithm; generalized linear models, including model types, inference and statistics for model fit; model validation, cross-validation; and predictive assessment. **Prerequisite:** MATH 152 and either STAT 350 or STAT 355 or permission of instructor.

STAT 432**Statistical Computer Packages and Their Applications. [1]**

The student will become familiar with the commercial statistical packages such as SAS, SPSS, BMDP, SPLUS and their uses for various statistical applications. **Prerequisite:** STAT 350, 351, 355 or 453, or permission of instructor.

STAT 433**Introduction to Statistical Computing. [3]**

Topics include pseudo-random numbers and tests for pseudo-randomness, sampling methods, direct methods, rejection sampling, variance reduction importance sampling, stochastic simulation methods, randomization tests, and the jackknife and the bootstrap. Additional topics such as Gibbs sampling, Markov chains, Monte-Carlo and EM algorithm may be covered. **Prerequisite:** STAT 453.

STAT 451**Introduction to Probability Theory. [3]**

Topics include probability spaces and probability calculus, random variables and their distribution functions, the calculus of expectations, characteristic functions and large sample theory. **Pre- or Corequisite:** MATH 251. **Recommended:** CMSC 203.

STAT 453**Introduction to Mathematical Statistics. [3]**

Principles of statistical decision theory, theories of estimation and hypothesis testing, optimality, power functions, estimation by confidence intervals and decision-making. **Prerequisite:** STAT 451.

STAT 454**Applied Statistics. [3]**

Introduction to statistical computing and statistical computation packages: BMD and SPSS. Multiple regression and correlation analysis, analysis of variance and covariance, non-linear regression, contingency table analysis, design of experiments, and robust and non-parametric methods. **Note:** Approved by the Society of Actuaries to satisfy its Validation by Educational Experience (VEE) in Applied Statistical Methods. **Prerequisite:** STAT 350 or 351, 355 or 453, or permission of the instructor.

STAT 455**Design of Experiments and Quality Control. [3]**

Topics include principles of experimental design, randomized designs and analysis of variance, Latin square designs, incomplete block designs, factorial designs, control charts for variables and attributes, cusum chart, acceptance sampling, response surface methodology and the Taguchi approach to parameter designs. **Prerequisite:** STAT 453.

STAT 470**Probability for Actuarial Science. [1]**

This brief course is intended to prepare students to take Society of Actuaries Exam Course P/1 Probability. **Prerequisite:** STAT 451.

STAT 490
Special Topics
in Statistics. [1-4]

STAT 496
Statistics Practicum. [1-4]

Under faculty direction, students will write a report dealing with statistical concepts or techniques utilized or implemented in internships, cooperative education or in the workplace. **Note:** This course is repeatable up to four times. **Prerequisite:** Permission of instructor.

STAT 497
Senior Thesis.

The student will be required to prepare an exposition of either a significant area of statistics or of the results of a student research project. Typically, the former will be in connection with an upper-division course the student has completed or independent study (STAT 499).

STAT 499
Independent Study
in Statistics. [1-4]

Under this heading, a student may agree to a course with a particular faculty member on a topic not covered in the regular curriculum. The arrangements with the faculty member must be made before the student registers for the course.

Theatre

THTR 100
Introduction to
Scenography (AH). [3]

A theoretical introduction to the artistic and aesthetic aspects of theatre scenography, which includes the development of stage scenery, props and methodology. Lectures will cover the historical, conceptual and technical characteristics of set design. Students will read and analyze plays from the perspective of a designer and will supplement that study with practical experiences relating to department productions. **Note:** Required for all theatre majors.

THTR 104
Introduction to Costume. [3]

A study of the process involved in the creation of clothing for the stage. The course will examine clothing in its historical context through the use of film, slides, guest lecturers and department productions. Students will learn to read and analyze scripts with an eye to discovering the finer points of gender, class, rank and age. Lab hours will reinforce these concepts by allowing students to work on specific projects related to departmental productions. **Note:** Required for all theatre majors.

THTR 110
Introduction to Acting (AH). [3]

Beginning elements of the acting process. Elementary work in the use of texts and physical exploration to gain basic acting tools. This course is intended for the non-major. **Note:** Recommended for freshmen and sophomores.

THTR 120
Introduction
to Theatre (AH). [3]

A course designed to increase the student's awareness and enjoyment of theatre. Attention is given to conventional forms of drama and newer kinds of performance with attention to their sources in theatre history. The students become familiar with how theatre is made and the people who make it: actor, director, writer and designer. The nature of the audience and the relationship of theatre to society are discussed. The students read plays and see films, plays and other theatre events at UMBC and around Baltimore.

THTR 202
Introduction to
Dramatic Literature (AH). [3]

The structure for this course is twofold: First, the students become familiar with basic methods of reading and analyzing plays; and then the students apply these methods to a significant number of dramatic texts from Western cultures. Assigned readings, while including classic works, will focus on dramatic literature from the late 19th century to the present. **Note:** Required for all theatre majors.

THTR 204
The American Musical. [3]

This course will follow the changing form and content of the American musical. After a brief summary of early American musical plays, revues and operettas, the major part of this course will concentrate on innovations that have changed these old forms into the modern musical. These changes also will reflect changing social patterns in the United States. Some original sources will be compared with the resulting musicals. Films, recordings and live singers will be used in the class.

THTR 206
Fashion, Costume
and Society (AH). [3]

A theoretical introduction to the artistic and aesthetic aspects of fashion. Students will examine the psychology of clothing and how styles developed through different historical periods. Fashion, mirroring societal changes, will be studied as an outcome of class struggle, politics, economics and attitudes toward the human body.

THTR 210
History of the
Theatre I (AH). [3]

A study of the evolution of theatre from the ancient world to the Renaissance. Students read a series of plays by the major playwrights. These are discussed as reflections of the changing physical theatre, as well as the social, political and artistic currents of each period. The emphasis is on the theatre of the West, although the course may trace conventions and consider some of the drama from the theatre of the East and other non-Western traditions. **Note:** Required for all theatre majors.

THTR 211
History of the
Theatre II (AH). [3]

Post-Renaissance theatre through the rise of realism and naturalism to the grounds of modern theatre practice. The course relates dramatic literature to emerging ideas of acting, directing, stage design, as well as new forms of theatre architecture and new concepts of performance. As in THTR 210, tendencies in the theatre are examined in view of the changing social and cultural scene. **Note:** Required for all theatre majors.

THTR 220
Craft of Acting I. [4]

Elements of the acting process; centering, concentration and focus; sense and emotional memory; learning to draw upon one's own experience as the basis of performance; gaining access to the unconscious; the attitude of public solitude; following an impulse; gesture and rhythm. Individual and group exercises. **Note:** Linked course to THTR 222. Repeatable once for credit with consent of instructor.

THTR 221
Craft of Acting II. [4]

Continuation of THTR 220, moving the elements of craft toward specific ideas of performance, the basic act toward the concept of dramatic action. Defining motives for acting: act how? For whom? Under what circumstances? To what end? **Note:** Linked course to THTR 223. Repeatable for credit with consent of instructor.