Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

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Check all appropriate lines and complete all information. Use a separate cover sheet for each.

Course Proposals (check all that apply)

Liberal Studies Course (please mark the appropriate categories below)

☐ Learning Skills ☐ Knowledge Area ☐ Global and Multicultural Awareness ☐ Writing Across the Curriculum (W Course)

☐ Liberal Studies Elective (please mark the designation(s) that applies — must meet at least one)

☐ Global Citizenship ☐ Information Literacy ☐ Oral Communication

I. Catalog Description

MATH 412 Multivariate Data Analysis   **(3c-0l-3cr)**
Prerequisites: MATH 214, 216, or 217, or permission of the instructor.

An applied statistics course that focuses on multivariate statistical methods. Research procedures on the relationship among variables, significance of group differences, prediction of group membership, and structure exploration are introduced. Factorial analysis of variance, analysis of covariance, multivariate analysis of variance and covariance, path analysis, factor analysis, and discriminant analysis are introduced and used to analyze data. Emphasizes the applied aspects of these statistical methods and uses computer software for data analysis.

II. Course Outcomes

Students completing this course will be able to

Exam 1 (1 hour)

C. Multivariate Analysis of Variance and Covariance (8 hours)

1. Testing for the equality of population mean vectors.
2. Testing for the equality of the adjusted population mean vectors.
3. Assessing the assumptions of the multivariate analysis of variance and covariance methods.
4. Interpretation of results.

D. Path Analysis (6 hours)

1. Reviewing simple and multiple linear regression methods.
2. Constructing the path diagram and structural equations.
3. Estimating structural coefficients.
4. Assessing the model fit and interpretation of results.

Exam 2 (1 hour)

E. Factor Analysis (7 hours)

1. Maximum likelihood, unweighted least squares, and generalized least squares approaches to factor extraction.
2. Concepts and applications of factor loading, communalities, and scree plot.
3. Applying orthogonal and oblique rotation techniques.
4. Testing the multivariate normality and linearity assumptions.
5. Assessing the model fit and interpretation of results.

F. Discriminant Analysis (7 hours)

1. Discriminant function, standardized and unstandardized coefficients, discrim-
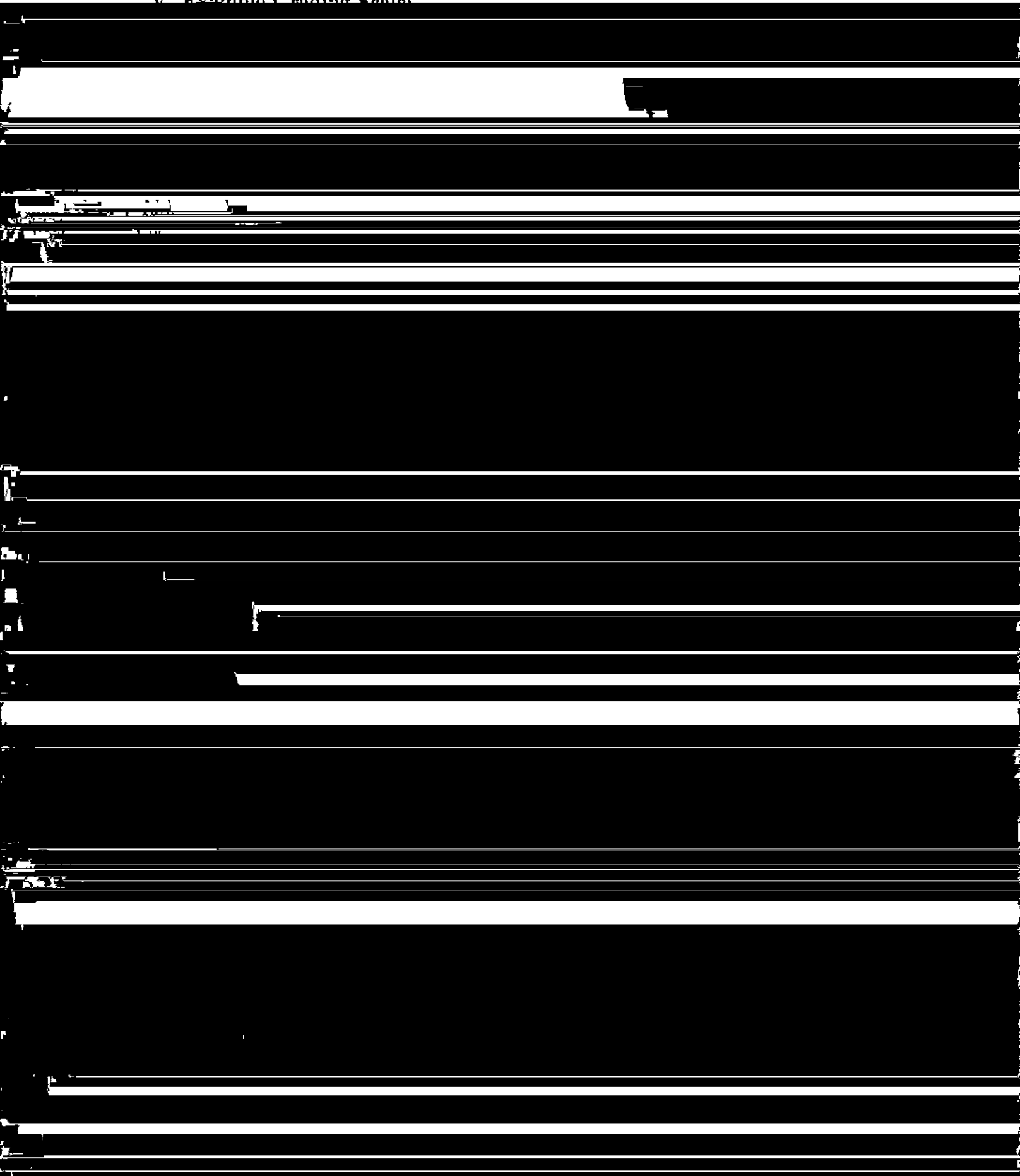
Course Analysis Questionnaire

A Details of the Course

A1 This course will be the second course of a new required core course sequence in the Applied Statistics minor. This course is designed for both majors and non-majors who are part of the Applied Statistics minor. No other courses in the department cover similar material.

A2 This course will require a change in the Applied Statistics minor. A comprehensive proposal for the revision of the Applied Statistics minor program will be submitted

(c) Laboratory Supplies with other Consumable Goods: No laboratory supplies are needed for this course.

(d) Library Materials: Current library materials are adequate for this course.

(e) Travel Supplies: Travel supplies are not needed for this course.

C3 None of the resources for this course are funded by a grant.

C4 We plan to offer this course every academic year.

C5 We plan to offer one section of this course during a semester.

C6 Stright 220 has 30 computers available. Therefore we plan to accommodate 30 students in a section of this course.

C7 No professional societies recommend enrollment limits or parameters for a course of