COLLEGE OF ARTS AND SCIENCES
NEW PROGRAM REVIEW FORM

	Chair's Signature	Recommendation	Review Date
Department	**Kevin Charlwood**	**Approve**	**2017-09-11**
Division	**Jennifer Wagner**	**Approve**	**2017-09-15**
Dept. of Educ. (If relates to teacher certification program.)	**N/A**		
Dean	**Laura Stephenson**	**Approve**	**2017-09-18**
Curriculum Committee	**Linzi Gibson**	**Approve**	**2017-10-02**
Accepted by CFC	**Julie Velez**	**Approve**	**2017-11-14**
CAS Faculty	**Julie Velez**	**Approve**	**2018-03-01**

Approved By:	**Faculty Senate**	**University Faculty**	**WU Board of Regents**

1. Title of Program.

   Applied Statistics

2. Rationale for offering this program.

   Applied or research statisticians are in high demand by business, industry and government. Our actuarial science track is focused on preparing students to become actuaries, and to pursue the Society of Actuaries (SOA) or Casualty Actuary Society (CAS) exam series to gain credentialing as associates or fellow of the respective societies. The new Applied Statistics tracks overlaps heavily with the actuarial science track, featuring three new courses in place of MA 343 Applied Statistics, MA 384 Theory of Interest, and MA 385 Actuarial Mathematics. These three new courses, MA 340 ANOVA/Design of Experiments, MA 341 Nonparametric Tests/Quality Control and MA 342 Statistical Computing have already been proposed in the CAS online proposal system. The statistical applications contained in these courses, especially the computing course, will make successful students highly marketable for any positions requiring a strong statistics background. The new program also provides a nice option for students in the actuarial science track who opt not to pursue the SOA/CAS professional exam series.

3. Exact proposed catalog description.

   Mathematics â€" Applied Statistics specialization
   STUDENT LEARNING OUTCOMES
   1. Students will demonstrate the ability to solve a variety of problems in mathematics including calculus, probability and statistics, and linear algebra.
   2. Students will demonstrate the ability to write mathematically, using proofs and/or statistical analysis, and to solve challenging problems both pure and applied.
   3. Students will demonstrate the ability to communicate mathematical and statistical results both

orally and in writing.
4. Students will demonstrate the ability to identify and utilize the appropriate practices and tools, including the use of technology, to solve mathematics problems and perform statistical modeling and analysis of data.

Courses
Calculus (MA 151, 152, 253), Linear Algebra (MA 301), ANOVA/Design of Experiments (MA 340), Nonparametric/Quality Control (MA 341), Statistical Computing (MA 342), Mathematical Statistics I (MA 344), Mathematical Statistics II (MA 345), Regression Analysis (MA 346), Stochastic Processes (MA 347), Time Series Analysis (MA 348), Introduction to Structured Programming (CM 111), Contemporary Programming Methods (CM 245), Data Structures and Algorithmic Analysis (CM 307), Data Mining (CM 332), and Database Management Systems (CM 336).

Both BA and BS options are possible. Other requirements for the program are those for the BA or BS degrees. MA 340, 341, and 342 are new courses.

4. List and financial implications.

Both Drs. Mosier and Shaw will teach the new courses; based on frequency of offering, we will need to find instruction for one section of MA 140 Statistics each semester. With current adjunct costs of $1,860 per three-credit course (for those possessing a Master's degree), this amounts to $3,720 per year.

5. Are any other departments affected by this new program?

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The MA 343 Applied Statistics course will eventually be replaced by a selection of one of MA 340, 341 or 346. CIS students are impacted by this, for those in a CIS track where MA 343 is an option/requirement. We plan to offer MA 343 in SP18 and SP19 to assuage these concerns. Our other tracks in Mathematics & Statistics are also affected by this change involving MA 343, which will be addressed with the appropriate program changes. The five proposed CIS courses for Applied Statistics are already regularly offered by CIS.