The University of Arizona

Graduate Interdisciplinary Program in Statistics

Online Graduate Certificate Program Handbook

Contacts

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IMPORTANT: All official UA business including billing reminders and student and instructor notifications are done through UA email addresses. A personal email address cannot be used. Make sure to check your UA email address regularly.

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To Prospective Students

Dear Student,

Thank you for your recent inquiry expressing interest in our online certificate in the Statistics Program at the University of Arizona. Our program is currently accepting applications for the Fall 2016 semester. The application deadline is July 31, 2016. The online program, through the University of Arizona's UAOnline, offers four fully online courses and is perfect for working professionals wishing to obtain a deeper understanding of statistical methodology, inference, and practice, and offers greater depth of focus to their data-analytic training. Online course options include:

MATH/STAT 564 -- Theory of Probability (3 units)

MATH/STAT 566 -- Theory of Statistics (3 units)

MATH/STAT 571A – Advanced Statistical Regression Analysis (3 units)

MATH/STAT 571B -– Design of Experiments (3 units).

Completing these four courses will satisfy your certificate requirements. In addition, we highly anticipate expanded options for online courses coming soon.

To submit an application, go to www.grad.arizona.edu and click on “apply now.” For your application, please submit a statement of purpose and your transcripts. All applicants are required to have a 3.0 GPA and need 3 semesters of Calculus and 1 semester of linear algebra to be eligible for the program. Standardized tests are not required for application to the Certificate program.

Applicants whose grade point averages fall below 3.0 can petition for admittance. The Graduate College will need to see a remediation plan that has been set by the Program Chair and has been stated as acceptable to the applicant.

If you have any questions about our program, please contact the Program Coordinator by phone (520) 621-1786 or by email (ksouders@email.arizona.edu) You may also contact the Program Chair of the our program, Dr. Joseph C. Watkins, at jwatkins@math.arizona.edu.

We look forward to reviewing your application!

1. Program Description

The Statistics Graduate Interdisciplinary Program is pleased to offer a fully online Certificate Program. The Certificate consists of four 3 unit graduate courses and must include MATH/STAT 566, Theory of Statistics. The online program, through the University of Arizona's UAOnline system, offers four fully online courses and is perfect for working professionals wishing to obtain a deeper understanding of statistical methodology, inference, and practice, and offers greater depth of focus to their data-analytic training.

Online course options include:

MATH/STAT 564 -- Theory of Probability (3 units)

MATH/STAT 566 -- Theory of Statistics (3 units)

MATH/STAT 571A – Advanced Statistical Regression Analysis (3 units)

MATH/STAT 571B -– Design of Experiments (3 units).

As capacity permits, we will add Big Data Courses to the online program including MATH 574M, Statistical Machine Learning and STAT 675, Statistical Computing.

1a. Program Prerequisites

To be eligible for the Certificate Program, a student must meet the following requirements:

(a) Applicant must have a or be in the process of completing a Baccalaureate Degree, either in a mathematical field or a field that makes significant use of quantitative methods, with at least a 3.0 overall grade point average (GPA). A previous degree in Statistics or Biostatistics is useful, but not required.

(b) At least three semesters of Calculus through multivariable/vector calculus (at the level of MATH 125, MATH 129, MATH 223), and one semester of Linear Algebra (at the level of MATH 215), and experience with computer technologies.

(c) International students applying from non-English-speaking countries must meet the Graduate College's minimum requirements for admission: http://grad.arizona.edu/admissions/requirements/english-proficiency

Standardized tests are not required for admission to the Graduate Certificate program.

Concurrent enrollment in another University degree program outside of the GIDP in Statistics is allowed, but not required. For information on time limitations and transferring credit to the

Certificate program, please see Graduate College policies at http://grad.arizona.edu/gsas/degree-requirements/certificate.

1b. Course Descriptions

STAT 564, Theory of Probability (3 units)

Offered in the fall semester

Probability spaces, random variables, weak law of large numbers, central limit theorem, various discrete and continuous probability distributions. Graduate-level requirements include more extensive problem sets or advanced projects.

Professor: Selena (Yue) Niu, PhD, yueniu@math.arizona.edu

Textbook: *Statistical Inference*, by George Casella and Roger L. Berger, 2nd Edition, 2001. Duxbury, ISBN 0-534-24312-6.

STAT 571A, Advanced Statistical Regression Analysis (3 units)

Offered in the fall semester

Regression analysis including simple linear regression and multiple linear regression. Matrix formulation and analysis of variance for regression models. Residual analysis, transformations, regression diagnostics, multicollinearity, variable selection techniques, and response surfaces. Students will be expected to utilize standard statistical software packages for computational purposes.

Professor: Walter Piegorsch, PhD, piegorsch@math.arizona.edu

Textbook: Kutner, M.H., Nachtsheim, C.J., and Neter, J. (2004). *Applied Linear Regression Models*, 4th Edn. Boston: McGraw-Hill Irwin. ISBN: 978-0-07-301344-2.

STAT 566, Theory of Statistics (3 units) - REQUIRED

Offered in the spring semester

Sampling theory. Point estimation. Limiting distributions. Testing Hypotheses. Confidence intervals. Large sample methods.

Professor: Helen (Hao) Zhang, PhD, haozhang@email.arizona.edu

Textbook: *Statistical Inference*, by George Casella and Roger L. Berger, 2nd Edition, 2001 Duxbury, ISBN 0-534-24312-6.

STAT 571B, Design of Experiments

Offered in the spring semester

Principles of designing experiments. Randomization, block designs, factorial experiments, response surface designs, repeated measures, analysis of contrasts, multiple comparisons, analysis of variance and covariance, variance components analysis.

Professor: Lingling An, PhD, anling@email.arizona.edu

Textbook: *Design and Analysis of Experiments* by Montgomery (8th Edition)

MATH 574M, Statistical Machine Learning

Offered in class only. Coming Soon for online students

Basic statistical principles and theory for modern machine learning, high dimensional data analysis, parametric and nonparametric methods, sparse analysis, shrinkage methods, variable selection, model assessment, model averaging, kernel methods, and unsupervised learning.

STAT 675, Statistical Computing

Offered in class only. Coming Soon for online students

Techniques of advanced computational statistics. Numerical optimization and integration pertinent for statistical calculations; simulation and Monte Carlo methods including Markov chain Monte Carlo (McMC); bootstrapping; smoothing/density estimation; and other modern topics.

Prerequisite Course Policy

Prerequisite courses necessary to undertake a course chosen for the Graduate Certificate are the responsibility of the student and may only count towards the Certificate if they are already listed as a Core Course or as Elective Courses.

2. Enrolling in the Online Certificate Program

Note for Alabama and Maryland Residents: As a result of legislative regulations in these states, the University of Arizona cannot currently consider applications for online degree certification programs from applicants whose primary residence is in Alabama or Maryland

2a. Applying

For information on our application: http://grad.arizona.edu/programs/programinfo/STACRTG

You can apply directly from this page by clicking the APPLY NOW button on the top right of the page, or you can begin at http://grad.arizona.edu/

Application deadline for Fall 2016: July 31, 2016

Certificate Application Fee: $85.00

Please use the following information in your Program Application:

Application Type: Certificate Program: Statistics Graduate Interdisciplinary Program Semester: Fall 2016 UA Site: UAOnline

If accepted to the Certificate Program, you will receive an email with information on your studentID and accessing your student information on UAccess, http://uaccess.arizona.edu/. This portal contains your contact information, academic information including enrollment and grades, and financial charges on your account. This is also the portal through which you will enroll in your Online courses.

2b. Tuition Payment

Program Cost

Per unit cost: $800

Total cost of 12-unit Certificate for residents: $9,600

There is an additional mandatory fee that will be charged. The Arizona Financial Aid Trust Fee (AFAT) ($25 for 1-6 units; $49 for 7 or more units) is a fee required by the Arizona Board of Regents (ABOR).

2c. Billing

Tuition bills will come through the Bursar's Office. Students will be able to see their charges and make payments through UAccess Student Center. Check with the Bursar's Office for payment options. Bursar's Office at (520) 621-3232 or website for further information: http://bursar.arizona.edu/

UA Bursar's Office mail tuition bills the week of July 27th, if registration occurs after this date, check your UAccess record for semester charges by no later than August 20th.

FINANCIAL AID: Certificate students are not eligible for financial aid, unless concurrently enrolled in an MS or PhD program.

QUALIFIED TUITION REDUCTION/EDUCATIONAL ASSISTANCE PROGRAM (QTR): UA Online Campus accepts QTR. For more information on applying for QTRs check with UA Division of Human Resources: http://www.hr.arizona.edu/qualified_tuition_reduction

NON-DEGREE SEEKING STUDENT: Only online degree and certificate students enroll through the Online Campus. Non-degree seeking students will register through Main Campus in an online course or iCourses. Standard resident and non-resident tuition and UA mandatory fees apply for iCourses. For price, see the Tuition and Fee tables on the Bursar's Office website: http://bursar.arizona.edu/students/fees

3. Information for Enrolled Students

3a. Registering for Courses

Your courses can be found in UAccess under the Online Campus.

How to register for your Statistics course through UAccess:

1. Go to the UAccess: http://uaccess.arizona.edu/
2. Click on "Student Center"
3. Log in using your UANetId
4. In the Academics section, click on "Enroll". This will take you to the Add Classes screen.
5. Click on the SEARCH tab at the top of this screen. This will take you to the Search Criteria screen.
6. For TERM, select the semester you will be taking this class - (Fall 2016)
7. In SUBJECT, type in or select STAT.
8. **For CAMPUS verify is says UAOnline (IMPORTANT - IF YOU ENROLL IN THE INCORRECT SECTION, YOU WILL NOT BE ABLE TO ACCESS THE ONLINE COURSE)**
9. Click the green SEARCH button. You should see all the STAT courses on the screen.
10. Scroll down to select your class and click on "Enroll" at the bottom of the screen to register for the course.

If you have any difficulties registering for your course(s) for Fall 2016 please contact Janet Harkins at (520) 621-7724 and she can assist you.

3a.i. Add/Drop Deadlines

It is important that students review the deadlines for drop/add along with any associated fees connected with dropping or adding a course. This information is found on the **UA Dates and Deadlines Guide: http://registrar.arizona.edu/dates-and-deadlines/view-dates-grad-students?field_display_term_value=154**

3a.ii. Refunds

UAOnline students follow the standard refund deadlines. Refund deadlines are found on the **UA Dates and Deadlines Guide:** **http://registrar.arizona.edu/dates-and-deadlines/view-dates-grad-students?field_display_term_value=154**

3b. Online Course Structure

The Statistics GIDP's online courses are generally offered in a 'hybrid' style, with both distance students and on-campus students registered to take the course. Class sessions/lectures/recitations are recorded digitally and stored as podcasts for later online retrieval by all registered students, although on-campus students are also required to attend the actual class sessions. GIDP instructors also post various forms of additional material online, including sample data sets, applets and other forms of computer code, exam and homework solutions, etc., that enhance the students' experiences as they participate in course activities.

3b.i. D2L

Online Statistics Courses are administered through D2L (Desire to Learn!). After you have enrolled in your courses, you will be able to access course materials through the D2L website, https://d2l.arizona.edu/. Click on the gray UA NetID Login on the top left of the page to log into your online student portal. Your courses will be listed on the right. Links to help pages and contact information for D2L are on the D2L website. If you have questions about material in a specific online course, contact the course's professor.

3b.ii. Assessments

Assessment of course activity for online certificate students is conducted by homework assignments, examinations, and other written/oral products. Administration of such will vary, depending on each instructor's needs and target goals for the particular online course. For example, homeworks or written projects might be completed and submitted via email to the instructor, with scanned copies of the graded assignment returned to the student by email. Examinations might be administered as online/interactive products taken via an Internet-capable computer, sent via email as "take-home" PDFs (to be retuned via email to the instructor by a prespecified due date), or taken at a testing center near the student's off-site location with the aid of a local proctor. Oral presentations could be recorded by the student at her/his off-site location, saved as podcasts or other video files, then sent via email or shared over the Internet for the instructor to assess. In many instances, the University's 'Desire2Learn' (D2L; see https://d2l.arizona.edu/) courseware is employed as an online device for distributing and collecting assignments, and also to communicate grades and other instructor feedback.

5. The Certificate Program as a Means to a Master's Degree

Those contemplating a Master's degree in Statistics at the University of Arizona can begin their graduate training as an online certificate student, with tuition equal to Arizona's in-state tuition regardless of residency status. Indeed, the course can be taken from nearly anywhere in the world. In this way, students can continue their work life, sometimes with tuition support from their employer. Students highly successful in the Certificate Program can apply to transfer to the Master's Degree Program and complete the Master's Degree with a single year in residency. **This approach results in considerable savings over a two-year residency.**

6. Help

Questions about financial charges on your account: Suzanne Rodriguez, rodrigus@email.arizona.edu

Questions about enrolling in Online courses: http://grad.arizona.edu/admissions/faq

Questions about using the Online course system: http://help.d2l.arizona.edu/

All other questions should be directed to Kristina Souders, ksouders@email.arizona.edu