

**RECEIVED**

APR 10 2015

OFFICE OF THE  
SENATE COUNCIL**1. General Information**

1a. Submitted by the College of: ARTS &amp; SCIENCES

Date Submitted: 3/14/2015

1b. Department/Division: Statistics

1c. Contact Person

Name: Dr. Constance Wood

Email: cwood@uky.edu

Phone: 257-6115

Responsible Faculty ID (if different from Contact)

Name:

Email:

Phone:

1d. Requested Effective Date: Specific Term/Year<sup>1</sup> Fall/2016

1e. Should this course be a UK Core Course? No

**2. Designation and Description of Proposed Course**2a. Will this course also be offered through Distance Learning?: Yes<sup>4</sup>

2b. Prefix and Number: STA 650

2c. Full Title: Applied Multivariate Statistics

2d. Transcript Title: Applied Multivariate Statistics

2e. Cross-listing:

2f. Meeting Patterns

LECTURE: 3

2g. Grading System: Letter (A, B, C, etc.)

2h. Number of credit hours: 3

2i. Is this course repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester?

2j. Course Description for Bulletin: The main objective of this course is to equip students with the traditional and modern multivariate statistical methods. Students will learn the motivation behind these methods, how to apply them and interpret the results obtained. Focus will be on understanding distributional results rather than the technical derivations. Students will gain competency in writing R scripts for applying the multivariate methods learned.

- 2k. Prerequisites, if any: Graduate status in Master of Applied Statistics, STA 646, STA 648 Co-requisite: STA 649
- 2l. Supplementary Teaching Component:
3. Will this course taught off campus? No  
If YES, enter the off campus address:
4. Frequency of Course Offering: Spring,  
Will the course be offered every year?: Yes  
If No, explain:
5. Are facilities and personnel necessary for the proposed new course available?: Yes  
If No, explain:
6. What enrollment (per section per semester) may reasonably be expected?: 20
7. Anticipated Student Demand  
Will this course serve students primarily within the degree program?: Yes  
Will it be of interest to a significant number of students outside the degree pgm?: No  
If Yes, explain:
8. Check the category most applicable to this course: Relatively New – Now Being Widely Established,  
If No, explain:
9. Course Relationship to Program(s).  
a. Is this course part of a proposed new program?: Yes  
If YES, name the proposed new program: Master of Applied Statistics  
b. Will this course be a new requirement for ANY program?: No  
If YES, list affected programs:
10. Information to be Placed on Syllabus.  
a. Is the course 400G or 500?: No  
b. The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from **10.a** above) are attached: Yes

## Distance Learning Form

Instructor Name: Dr. Solomon Harrar

Instructor Email: solomon.harrar@uky.edu

Internet/Web-based: Yes

Interactive Video: No

Hybrid: No

1. How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations? The structure of the course is designed to include key elements of face-to-face classroom interaction while at the same time providing a range of flexibility associated with the structures of online education and distance learning. Highlights include: •Providing ways for students to access direct feedback to questions either through discussion groups or through weekly virtual "Meetings with the Expert." In these meetings (voice and chat synchronous, video asynchronous) students will have an opportunity to meet with the course instructors via Adobe Connect, Skype, or the best, similar method. We are currently testing alternatives. •Lectures that will be presented using the University's new lightboard. This creates an environment that is very similar to that in the classroom. •A clear weekly schedule with well-defined assignments and projects. •Periodic assessments with timely feedback.

2. How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc. See answer above. This course: •Provides ways for students to access direct feedback to questions either through discussion groups or through weekly virtual "Meetings with the Expert." •Contains a balanced mix of course-related recorded media. This will primarily include recorded lightboard presentations, voice-over presentations, and short animations. All such media is intended to create an environment that is very similar to that in the classroom. •Will always be a clear weekly schedule with well-defined assignments and projects. •Requires periodic assessments with timely feedback.

3. How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc. The nature of many of the assignments in the class is not really very conducive to plagiarism and a number of simple steps will help insure the integrity of the work. When objective assessments are used students will be required to use a lockdown browser. In general students may be asked to digitally sign a statement that they have neither given nor received inappropriate help on the assignment. In addition, the instructor may elect to have some answers submitted via video. We have used this technique in other of our online courses and it helps tremendously as a periodic check on how much the student really knows about the topics at hand. In addition, since this is an online course it would be very difficult for students to copy from one another. The course follows the standard UK policies for academic offenses which are spelled out in the syllabus.

4. Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above? Yes

If yes, which percentage, and which program(s)? Master of Applied Statistics (100%)

5. How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting? All students in this course will have access to UKIT and the Distance Learning Library and the contact information is available in the syllabus. The instructor of the course will hold regular weekly contact hours ("Meet the Expert") and the students can access the instructional team in a variety of ways. Moreover the instructional team will respond to all emails within 24 hours.

6. How do course requirements ensure that students make appropriate use of learning resources? The course is set up to require a combination of reading, mathematical, communication and computing skills. Over the duration of this course, assignments will require students to utilize all of these learning resources to successfully complete them.

7. Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program. The computer hardware required to complete this course is standard equipment and common for most graduate students or professional. The software required is either open source software (meaning it is free to use and widely available), or available for free download for any registered U.K. student. Both the hardware and software requirements are clearly specified in the syllabus. There are special arrangements needed for using SAS on a Mac, but these will be communicated to affected students well in advance.

8. How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (<http://www.uky.edu/UKIT/>)? The course syllabus provides contact information for the Information Technology Customer Service Center to assist with the delivery and receipt of the course via the Canvas LMS, which is expected to be the official LMS for U.K. by the time the program starts. During the course we will also instruct students on other means of troubleshooting technical problems (course discussion groups, installation of R, etc.) that arise as part of their assignments.

9. Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)? YES

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology. Not applicable

10. Does the syllabus contain all the required components? YES

11. I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name: Dr. Solomon Harrar

SIGNATURE|ASTRO11|Arnold J Stromberg|STA 650 NEW Dept Review|20150313

SIGNATURE|ACSI222|Anna C Harmon|STA 650 NEW College Review|20150407

SIGNATURE|ZNNIKO0|Roshan Nikou|STA 650 NEW Graduate Council Review|20150410

## New Course Form

<https://myuk.uky.edu/sap/bc/soap/rfc?services=>

[Open in full window to print or save](#)

Generate R

## Attachments:

[Browse...](#)

Upload File

ID	Attachment
<a href="#">Delete</a> 4636	STA 650 Syllabus.pdf
<input type="button" value="First"/> 1 <input type="button" value="Last"/>	

(\*denotes required fields)

## 1. General Information

- a. \* Submitted by the College of:  Submission Date:
- b. \* Department/Division:
- c.
- \* Contact Person Name:  Email:  Phone:
- \* Responsible Faculty ID (if different from Contact):  Email:  Phone:
- d. \* Requested Effective Date:  Semester following approval OR  Specific Term/Year <sup>1</sup>
- e.
- Should this course be a UK Core Course?  Yes  No
- If YES, check the areas that apply:**
- Inquiry - Arts & Creativity  Composition & Communications - II
- Inquiry - Humanities  Quantitative Foundations
- Inquiry - Nat/Math/Phys Sci  Statistical Inferential Reasoning
- Inquiry - Social Sciences  U.S. Citizenship, Community, Diversity
- Composition & Communications - I  Global Dynamics

## 2. Designation and Description of Proposed Course.

- a. \* Will this course also be offered through Distance Learning?  Yes <sup>1</sup>  No
- b. \* Prefix and Number:
- c. \* Full Title:
- d. Transcript Title (if full title is more than 40 characters):
- e. To be Cross-Listed <sup>2</sup> with (Prefix and Number):
- f. \* Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours<sup>3</sup> for each meeting pattern type.
- |  |  |                                 |                                 |
|--|--|---------------------------------|---------------------------------|
| <input type="text" value="3"/> Lecture | <input type="text"/> Laboratory <sup>4</sup>   | <input type="text"/> Recitation | <input type="text"/> Discussion |
| <input type="text"/> Indep. Study      | <input type="text"/> Clinical                  | <input type="text"/> Colloquium | <input type="text"/> Practicum  |
| <input type="text"/> Research          | <input type="text"/> Residency                 | <input type="text"/> Seminar    | <input type="text"/> Studio     |
| <input type="text"/> Other             | If Other, Please explain: <input type="text"/> |                                 |                                 |
- g. \* Identify a grading system:
- Letter (A, B, C, etc.)
- Pass/Fail
- Medicine Numeric Grade (Non-medical students will receive a letter grade)
- Graduate School Grade Scale<sup>5</sup>
- h. \* Number of credits:
- i. \* Is this course repeatable for additional credit?  Yes  No
- If YES: Maximum number of credit hours:
- If YES: Will this course allow multiple registrations during the same semester?  Yes  No

## j. \* Course Description for Bulletin:

The main objective of this course is to equip students with the traditional and modern multivariate statistical methods. Students will learn the motivation behind these methods, how to apply them and interpret the results obtained. Focus will be on understanding distributional results rather than the technical derivations. Students will gain competency in writing R scripts for applying the multivariate methods learned.

## k. Prerequisites, if any:

Graduate status in Master of Applied Statistics, STA 646, STA 648  
Co-requisite: STA 649

l. Supplementary teaching component, if any:  Community-Based Experience  Service Learning  Both3. \* Will this course be taught off campus?  Yes  No

If YES, enter the off campus address: \_\_\_\_\_

## 4. Frequency of Course Offering.

a. \* Course will be offered (check all that apply):  Fall  Spring  Summer  Winter

b. \* Will the course be offered every year?  Yes  No

If No, explain: \_\_\_\_\_

5. \* Are facilities and personnel necessary for the proposed new course available?  Yes  No

If No, explain: \_\_\_\_\_

## 6. \* What enrollment (per section per semester) may reasonably be expected? 20

## 7. Anticipated Student Demand.

a. \* Will this course serve students primarily within the degree program?  Yes  No

b. \* Will it be of interest to a significant number of students outside the degree pgm?  Yes  No

If YES, explain: \_\_\_\_\_

## 8. \* Check the category most applicable to this course:

- Traditional - Offered in Corresponding Departments at Universities Elsewhere  
 Relatively New - Now Being Widely Established  
 Not Yet Found In Many (or Any) Other Universities

## 9. Course Relationship to Program(s).

a. \* Is this course part of a proposed new program?  Yes  No

If YES, name the proposed new program: \_\_\_\_\_

Master of Applied Statistics

b. \* Will this course be a new requirement for ANY program?  Yes  No

If YES, list affected programs: \_\_\_\_\_

## 10. Information to be Placed on Syllabus.

a. \* Is the course 400G or 500?  Yes  No

If YES, the *differentiation for undergraduate and graduate students must be included* in the information required in 10.b. You must include: (i) identification of all assignments by the graduate students; and/or (ii) establishment of different grading criteria in the course for graduate students. (See SR 3.1.4.)

b.  \* The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from 10 attached.

## Distance Learning Form

This form must accompany every submission of a new/change course form that requests distance learning delivery. This form may be required when changing a course already approved for DL fields are required!

**Introduction/Definition:** For the purposes of the Commission on Colleges Southern Association of Colleges and Schools accreditation review, *distance learning* is defined as a fo educational process in which the majority of the instruction (interaction between students and instructors and among students) in a course occurs when students and instructors the same place. Instruction may be synchronous or asynchronous. A distance learning (DL) course may employ correspondence study, or audio, video, or computer technologies

A number of specific requirements are listed for DL courses. The **department** proposing the change in delivery method is responsible for ensuring that the requirements are satisfied at the individual course level. It is the responsibility of the instructor to have read and understood the university-level assurances regarding an equivalent experience utilizing DL (available at <http://www.uky.edu/USC/New/forms.htm>).

Course Number and Prefix:	STA 650	Date:	3/9/2015
Instructor Name:	Dr. Solomon Harrar	Instructor Email:	solomon.harrar@uky.edu
Check the method below that best reflects how the majority of the course content will be delivered.			
Internet/Web-based <input checked="" type="checkbox"/>		Interactive Video <input type="checkbox"/>	Hybrid <input type="checkbox"/>

### Curriculum and Instruction

1. How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Syllabus Guidelines, specifically the Distance Learning Considerations?

The structure of the course is designed to include key elements of face-to-face classroom interaction while at the same time providing a range of flexibility associated with the structures of online education and distance

2. How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, and student learning outcomes, etc.

See answer above. This course:

- Provides ways for students to access direct feedback to questions either through discussion groups or

3. How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic policy; etc.

The nature of many of the assignments in the class is not really very conducive to plagiarism and a number of simple steps will help insure the integrity of the work. When objective assessments are used students will be

4. Will offering this course via DL result in at least 25% or at least 50%\* (based on total credit hours required for completion) of a degree program being offered via any of as defined above?

Yes

Which percentage, and which program(s)?

Master of Applied Statistics (100%)

\*As a general rule, if approval of a course for DL delivery results in 50% or more of a program being delivered through DL, the effective date of the course's DL delivery months from the date of approval.

5. How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting? All students in this course will have access to UKIT and the Distance Learning Library and the contact information is available in the syllabus. The instructor of the course will hold regular weekly contact hours ("Meet the

### Library and Learning Resources

6. How do course requirements ensure that students make appropriate use of learning resources?

The course is set up to require a combination of reading, mathematical, communication and computing skills. Over the duration of this course, assignments will require students to utilize all of these learning resources to

7. Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

The computer hardware required to complete this course is standard equipment and common for most graduate students or professional. The software required is either open source software (meaning it is free to use and widely

### Student Services

8. How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or the course, such as the Information Technology Customer Service Center (<http://www.uky.edu/UKIT/>)?

The course syllabus provides contact information for the Information Technology Customer Service Center to assist with the delivery and receipt of the course via the Canvas LMS, which is expected to be the official IMS for U.K.

9. Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)?

Yes

No

If no, explain how students enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.  
Not applicable

10. Does the syllabus contain all the required components, below?  Yes

- Instructor's *virtual* office hours, if any.
- The technological requirements for the course.
- Contact information for Distance Learning programs (<http://www.uky.edu/DistanceLearning>) and Information Technology Customer Service Center (<http://www.uky.edu/UKIT/Help/>; 859-218-HELP).
- Procedure for resolving technical complaints.
- Preferred method for reaching instructor, e.g. email, phone, text message.
- Maximum timeframe for responding to student communications.
- Language pertaining academic accommodations:

- "If you have a documented disability that requires academic accommodations in this course, please make your request to the University Disability Resource Center. The Center will require current disability documentation. When accommodations are approved, the Center will provide me with a Letter of Accommodation details the recommended accommodations. Contact the Disability Resource Center, Jake Karnes, Director at 859-257-2754 or [jkarnes@email.uky.edu](mailto:jkarnes@email.uky.edu)."
- Specific dates of face-to-face or synchronous class meetings, if any.
- Information on Distance Learning Library Services (<http://www.uky.edu/Libraries/DLIS>)
  - Carla Cantagallo, DL Librarian
  - Local phone number: 859 257-0500, ext. 2171; long-distance phone number: (800) 828-0439 (option #6)
  - Email: [dllservice@email.uky.edu](mailto:dllservice@email.uky.edu)
  - DL Interlibrary Loan Service: [http://www.uky.edu/Libraries/libpage.php?web\\_id=253&lib\\_id=16](http://www.uky.edu/Libraries/libpage.php?web_id=253&lib_id=16)

11. I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

Dr. Solomon Harrar

Abbreviations: DLP = Distance Learning Programs ATG = Academic Technology Group Customer Service Center = 859-218-HELP (<http://www.uky.edu/UKIT/help>)

Revised 8/09

<sup>[1]</sup> Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.

<sup>[2]</sup> The chair of the cross-listing department must sign off on the Signature Routing Log.

<sup>[3]</sup> In general, undergraduate courses are developed on the principle that one semester hour of credit represents one hour of classroom meeting per week for a semester, exclusive of any laboratory meeting. A meeting, generally, represents at least two hours per week for a semester for one credit hour. (from SR 5.2.1)

<sup>[4]</sup> You must also submit the Distance Learning Form in order for the proposed course to be considered for DL delivery.

<sup>[5]</sup> In order to change a program, a program change form must also be submitted.

Rev 8/09



## **Syllabus for STA 650: Applied Multivariate Statistics (3 credit hours)**

**Instructor:** Solomon W. Harrar

**Office Phone:** +1 (859) 257-6903

**Email:** [solomon.harrar@uky.edu](mailto:solomon.harrar@uky.edu)

**Discussion Boards:** All content-related questions about the course – including homework questions – must be posted on the discussion boards. More information is provided below.

**Visual Office Hours:** Mon/Wed/Fri, 11 am to 12 pm, EST and by appointment

The instructor will be available on Adobe Connect during the office hours listed above. You may also contact the instructor by phone during office hours. Outside of office hours, please contact the instructor by email only. The instructor will answer emails received within one University of Kentucky-defined business day EST of receiving them.

**Course Website:** TBD

**Course Description:** The main objective of this course is to equip students with the traditional and modern multivariate statistical methods. Students will learn the motivation behind these methods, how to apply them and interpret the results obtained. Focus will be on understanding distributional results rather than the technical derivations. Students will gain competency in writing R scripts for applying the multivariate methods learned.

**Prerequisites:** Graduate status in Master of Applied Statistics, STA 646, STA 648

**Co-requisite:** STA 649

**Reference Texts:** R. A. Johnson and D. W. Wichern, Applied Multivariate Statistical Analysis, Sixth Edition, Pearson Education, Inc., 2007.

### **Reference Textbooks:**

C. Rencher, Methods of Multivariate Analysis, Second Edition, Wiley 2002;

F. J. Manly, Multivariate Statistical Methods: A Primer, Third Edition, Chapman & Hall/ CRC, 2005.

**Software:** This course will use the freeware, R, which is available for download. A number of editors for R are freely available, including [RStudio](#). All submitted documents must be typeset using LaTeX. Text editors for LaTeX are also freely available, including Texmaker.

**Student Learning Outcomes:** The central goal of this course is to acquire familiarity with multivariate methods and applying them to real life data. Specifically, after successful completion of this course, students will understand and develop proficiency in:

1. data reduction and simplification
2. grouping units based on their similarity on measured variables
3. explaining the nature of dependence or relationship between variables in simpler terms
4. using multivariate models for prediction of variables or group membership
5. formulating multivariate models and hypothesis for research questions
6. verifying assumptions needed for multivariate methods
7. carrying out multivariate analysis using the statistical software R

**Course Modules (Course Content):** Specific course modules to aid students in achieving the course

goals include the following.

Module	Theme	Specific Topics
1	Introduction	<ul style="list-style-type: none"> <li>• Applications of multivariate analysis and examples</li> <li>• Multivariate data</li> <li>• Descriptive methods</li> <li>• Graphical methods</li> </ul>
2	Multivariate Distributions and Random Sampling	<ul style="list-style-type: none"> <li>• Multivariate normal distribution and its properties</li> <li>• Sample mean vector, covariance and correlation matrices</li> <li>• Generalized variance</li> <li>• Sampling distributions</li> <li>• The geometry of the sample</li> <li>• Assessing multivariate normality</li> </ul>
3	Inference about Mean Vectors	<ul style="list-style-type: none"> <li>• Test for a single mean vector</li> <li>• Comparing two mean vectors</li> <li>• Test for additional information</li> <li>• One-way MANOVA</li> <li>• Simultaneous Inference</li> <li>• Two-Way MANOVA</li> </ul>
4	Repeated Measures and Growth-Curve Analysis	<ul style="list-style-type: none"> <li>• Repeated measures ANOVA</li> <li>• Multivariate analysis of repeated measures</li> <li>• Profile analysis</li> <li>• Growth-curve models</li> </ul>
5	Multivariate Regression	<ul style="list-style-type: none"> <li>• Multiple regression</li> <li>• Multivariate regression: estimation and tests</li> <li>• Prediction</li> <li>• Reduced Rank Regression (RRR)</li> <li>• Variable selection for dependent as well as independent variables</li> </ul>
6	Principal Components Analysis (PCA)	<ul style="list-style-type: none"> <li>• Population PCA</li> <li>• Sample PCA</li> <li>• Asymptotic inference</li> <li>• Kernel PCA</li> <li>• Functional PCA</li> </ul>
7	Canonical Correlations Analysis (CCA)	<ul style="list-style-type: none"> <li>• Linear CCA</li> <li>• Interpretation of canonical correlations and variates</li> <li>• Applications</li> <li>• Asymptotic inference</li> <li>• Kernel CCA</li> <li>• Functional CCA</li> </ul>

8	Discrimination and Classification	<ul style="list-style-type: none"> <li>• Classification and discrimination examples</li> <li>• Classification</li> <li>• Separation</li> <li>• Nonparametric methods (density estimation, nearest neighborhood, classification tree)</li> <li>• Logistic regression (binary, multinomial, ordinal)</li> </ul>
9	Clustering	<ul style="list-style-type: none"> <li>• Similarity measures</li> <li>• Hierarchical clustering</li> <li>• Non-hierarchical clustering</li> <li>• Clustering based on statistical models (latent class models)</li> <li>• Clustering variables</li> </ul>
10	Distance Methods and Ordination	<ul style="list-style-type: none"> <li>• Multidimensional scaling</li> <li>• Correspondence analysis</li> <li>• Graphical methods</li> <li>• Procrustes analysis</li> <li>• Data mining</li> </ul>

**Final Grade:** Your final course grade will be based on the following weighting of assessment components:

- Constructive Class Participation (Face Time and Discussion Board): 10%
- Homework: 40%
- Midterm Exam: 25%
- Final Exam: 25%

**Grading Scale:** Grades will be assigned according this scale, with course components weighted as above.

- At least an A: 90-100
- At least a B: 80-89
- At least a C: 70-79
- At least an E: 0-69

**Homework Assignments:** This course requires submission of at least one homework assignment for each module. We are primarily interested in being able to assess students' understanding of the course content, but we intend to challenge and increase students' presentation skills at the same time. To that end, students will need to be prepared to submit homework in a variety of ways. Some assignments may require professional formatting, while others may require scanning to pdfs. Details will be explained well in advance of due dates.

**Constructive Class Participation:** Constructive participation is expected of all students in the course. Each student is responsible for submitting assignments by their respective deadlines. Online discussion of assimilated class results is an imperative interactive component of this course. During such discussions, students are expected to interact in a timely and professional manner in order to make constructive contributions to collaborations with their classmates.

**Academic Integrity:** The Department of Statistics, the College of Arts and Sciences, and the University of Kentucky expect academically honest behavior. Refer to the University of Kentucky Student Rights and Responsibilities document at: [www.uky.edu/StudentAffairs/Code/part2.html](http://www.uky.edu/StudentAffairs/Code/part2.html).

**Disabilities:** If you have a documented disability that requires academic accommodations, please contact the course instructor as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide the instructor with a *Letter of Accommodation* from the Disability Resource Center (Jake Karnes, Director, 859-257-2754, [jkarnes@email.uky.edu](mailto:jkarnes@email.uky.edu)) for coordination of campus disability services available to students with disabilities.

**Syllabus Changes:** This syllabus is subject to change. Any such changes will be announced online.

**Tentative and Approximate Schedule of Course Modules:** Each module will be covered in approximately two weeks with the exception of modules 1, 4, 6, 7 and 10, which will only require one week.

**Exams:** There will be two exams: a midterm and a final exam. The exams will each require students to perform multivariate data analysis in R, assimilate results, and communicate the results of the task via graphical displays and/or a written report. These exams will be uploaded to the Canvas learning management system. Exams will be provided to students 48 hours prior to the submission deadline.

**Minimal Technology Requirements:** This course is an online course and content, assignments and interactions rely on all students having computer hardware and software. While these are available on computers in student computer labs on UK's campus, most students will not be physically present and are responsible for gaining access themselves.

#### *Hardware*

- Computer, a newer model with a recent operating system and a hard drive with at least 2-5 GB of free space (more can be useful).
- Webcam and a headset/microphone for online interaction
- A broadband internet connection

Students are responsible for ensuring that their computer is smoothly operating (virus free, OS updates, etc.).

#### *Software*

1. PDF reader, such as Adobe Acrobat Reader
2. Microsoft Office (Excel, Word, PowerPoint P available free through UK, <https://download.uky.edu/>)
3. R and SAS (available free through UK, <https://download.uky.edu/>)
4. Video Media player such as Windows Media Player, or Apple Quick Time
5. An Internet Browser supporting HTML 5, we recommend Chrome

In addition, as part of this course students will be expected to install various software programs, device drivers, etc. More specific instructions will be provided as part of the course.

### *Tests*

- **Check Your Computer** (<https://www.whatismybrowser.com/>) a quick test to see what browser version you are using, whether or not you have Java and JavaScript enabled, your version of Flash player, and several other items.
- **Speed Test** (<http://www.speedtest.net/>) Use this site to check what download speed you are getting. For videos to play, you need at least a 1 Mbps download speed. If higher, you will have less possibility of the videos having to stop and wait for more of the video to download.

**Special Resources for Online Students:** See UK's Distance Learning Webpage for a complete listing of services and contacts. <http://www.uky.edu/DistanceLearning/> or call (859) 257-3377 or email [distancelearn@lsv.uky.edu](mailto:distancelearn@lsv.uky.edu). Additional material will be distributed on online services from UK will be distributed as appropriate.

### Distance Learning Library Services

The goal of Distance Learning Library Services is to provide access to information resources for the students who take classes through the Distance Learning Programs. Services include:

- Access to the University's circulating collections
- Document Delivery & Interlibrary Loan
- Research Assistance

Information on Distance Learning Library Services:

<http://www.uky.edu/DistanceLearning/current/DLLS/>

DL Librarian: Carla Cantagallo

Local phone number: 859 257-0500, ext. 2171; long-distance phone number: (800) 828-0439 (option #6)

Email: [dllservice@email.uky.edu](mailto:dllservice@email.uky.edu)

DL Interlibrary Loan Service: [http://www.uky.edu/Libraries/libpage.php?lweb\\_id=253&llib\\_id=16](http://www.uky.edu/Libraries/libpage.php?lweb_id=253&llib_id=16)

### Information Technology Customer Service Center & Distance Learning Programs

UKIT <http://www.uky.edu/UKIT/> provides technical support to University of Kentucky students.

If students are having difficulty with UK-related systems, (<http://www.uky.edu/UKIT/Help/>; 859-218-HELP).

### Canvas Learning Management System

This course uses the Canvas Learning Management System or LMS. The course online system is available via Canvas at <https://uk.instructure.com/>. Use your LinkBlue account to login and you will

see this course under the courses menu (top of the page towards the left). This course - <https://uk.instructure.com/courses/1096339> offers an orientation to Canvas and the Help button in the top right corner provides quick access to the guides, ask the community and the phone number for 24/7 support. Course materials (syllabus, readings, assignments, discussions, exams, etc.) will all be posted here and you are responsible for any changes in assignments, readings and due dates posted on the course blog.

#### Other Technical Complaints

If the student is having difficulty with their own computer or software, they will be responsible for resolving these as soon as possible.

#### **Attendance and Completion of Assignments**

The student is expected to carry out all required work including participating on Discussion Boards, and to take all examinations at the time designated by the instructor.

Excused absences in excess of one-fifth of class contact hours (SR 5.2.4.2

[http://www.uky.edu/Faculty/Senate/rules\\_regulations/Rules%20Versions/MASTER%20RULES%20from%20September%202014\\_clean.docx](http://www.uky.edu/Faculty/Senate/rules_regulations/Rules%20Versions/MASTER%20RULES%20from%20September%202014_clean.docx)) will result in a Withdrawal from the course.

#### **Excused Absences and Make-up Opportunities**

A student will not be penalized for excused absences. Excused absences are defined in SR 5.2.4.2 and include, but are not limited to the following. Significant illness or the death of a member of the student's household (permanent or campus) or immediate family, The Instructor has the right to request appropriate verification. Excused absences include Major Religious Holidays. Students are responsible for notifying the Instructor of Record **in writing** of anticipated absences due to their observance of such holidays.

Students missing any graded work due to an excused absence bear the responsibility of informing the Instructor about their excused absence within one week following the period of the excused absence (except where prior notification is required), and of making up the missed work. The Instructor will give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and will do so, if feasible, during the semester in which the absence occurred.

**Final Exam: TBD**