The Undergraduate Curriculum Committee recommends approval of the following:

1. New Courses

**MGMT 261. Introduction to Entrepreneurship. (1-0). Credit 1.** Exposure to the mindset of entrepreneurship through interaction with successful entrepreneurs and hands-on activities for exploring the 21st century global entrepreneurial economy. May be taken two times for credit. Must be taken on a satisfactory/unsatisfactory basis. Prerequisite: Freshman classification in the Startup Living Learning Community.

**MGMT 477. Entrepreneurial Consulting and Development. (3-0). Credit 3.** Application of current lean startup methodologies working directly with existing student entrepreneurs and mentors in preparing for the launch of a real business at the student incubator (Startup Aggieland); act as advocates and consultants assisting with organizational structure, marketing and market validation, financial analysis and risk assessment. Prerequisites: Junior or senior classification and approval of instructor.

**STAT 182. Foundations of Statistics. (1-0). Credit 1.** Elementary topics in statistics; data collection; design of experiments; confidence intervals, hypothesis testing; ethics in statistics; the role of statistics in industry, the health profession and the sciences. Prerequisite: Statistics majors only.

**STAT 404. Statistical Computing. (3-0). Credit 3.** Statistical programming in R and SAS; random number generation; design of simulation studies; interactive and dynamic statistical graphics; parallel computing in statistics. Prerequisites: STAT 212; junior or senior classification or approval of instructor.

**STAT 406. Design and Analysis of Experiments. (3-0). Credit 3.** Design fundamentals; completely randomized designs; blocking; factorial, nested, nested-factorial designs; incomplete designs; fractional factorial designs; confounding; general mixed factorials; split pilot; analysis of covariance; crossover designs; power analysis, sample size determination. Prerequisite: STAT 212; STAT 408.

**STAT 426. Methods in Time Series Analysis. (3-0). Credit 3.** Autocorrelation and spectral characteristics of univariate, autoregressive and moving average models; identification, estimation and forecasting. Prerequisites: STAT 408; STAT 415 or approval of instructor.

**STAT 436. Multivariate Analysis and Statistical Learning. (3-0). Credit 3.** Matrix algebra; random vectors; multivariate distributions; copulas; multivariate generalizations of classical testing; principle component analysis; discriminant analysis; clustering; multidimensional scaling; factor analysis; canonical analysis. Prerequisites: MATH 304 or MATH 323; STAT 212; STAT 415 or equivalent.

**STAT 438. Bayesian Statistics. (3-0). Credit 3.** Analysis of scalar and vector-valued parameters; Bayesian linear models; Monte Carlo computational methods; prior elicitation; hypothesis testing and model selection; hierarchical models; selected advanced models; use of statistical packages such as WinBUGS, R or MATLAB. Prerequisites: MATH 221; STAT 408 or equivalent.

**STAT 445. Applied Biostatistics and Data Analysis. (3-0). Credit 3.** Applications of regression methods in biostatistics; correlated data analysis; survival analysis; missing data techniques; use of the R programming language. Prerequisites: STAT 212; STAT 408 or approval of instructor.

**STAT 446. Statistical Bioinformatics. (3-0). Credit 3.** Analysis of high-dimensional genomic and proteomic data using R; sequence analysis; genome-wide association studies; proteomics; array-based technologies; classification techniques. Prerequisites: STAT 212; STAT 408 or approval of instructor.
STAT 459. Categorical Data Analysis. (3-0). Credit 3. Techniques for the analysis of categorical data; contingency table analysis; logistic regression; Poisson regression; loglinear models; analysis of ordinal data; use of computer software such as SAS or R. Prerequisite: STAT 212; STAT 408 or equivalent.

STAT 482. Statistics Capstone. (3-0). Credit 3. Integration of statistical models, design, sampling, graphics and computing for the analysis of real problems; planning, drafting, revising and editing reports; ethics; principles of collaboration and communication. Prerequisites: STAT 404; STAT 406; STAT 408 and senior classification.

2. Withdrawal of Courses

EDTC 311. Adaptive/Assistive Technology.
SEFB 426. Effective Instruction of Students of Diverse Abilities.

3. Change in Courses

GEOG 201. Introduction to Human Geography.

   Lab contact hours
   From: (3-0). Credit 3.
   To: (3-1). Credit 3.

SPED 314. Effective Mathematics Strategies for Students with Disabilities

   Lecture contact hours and semester credit hours
   From: (3-0). Credit 3.
   To: (4-0). Credit 4.
NEW COURSES
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
*Submit original form and attach a course syllabus.*

Form Instructions:
1. Course request type:  ✔ Undergraduate  ☐ Graduate  ☐ First Professional (DVM, MD, JD, Ph.D, DVM)
2. Request submitted by (Department or Program Name): Department of Management
3. Course prefix, number and complete title of course: MGMT 261 Introduction to Entrepreneurship
4. Catalog course description (not to exceed 50 words):
   Exposure to the mindset of entrepreneurship through interaction with successful entrepreneurs and hands on activities for exploring the 21st century global entrepreneurial economy. Must be taken on a satisfactory/unsatisfactory basis.

5. Prerequisite(s):
   Freshmen classification in the Startup Living Learning Community.
   Cross-listed with:
   Stacked with:

6. Is this a variable credit course?  ☐ Yes  ✔ No
   If yes, from ________ to ________
7. Is this a repeatable course?  ✔ Yes  ☐ No
   If yes, this course may be taken ________ times.
   Will this course be repeated within the same semester?  ☐ Yes  ✔ No
8. Will this course be submitted to the Core Curriculum Council?  ☐ Yes  ✔ No
9. How will this course be graded?  ☐ Grade  ✔ S/U  ☐ P/F (CLAD)

10. This course will be:
   a. required for students enrolled in the following degree programs(s) (e.g., B.A. in history)
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

   Undergraduate general academics

11. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

12. ✔ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://retr.tamu.edu/resources/export-control-basics-for-distance-education).

13. Prefix  Course #  Title (excluding punctuation)
    MGMT 261  INTRO TO ENTREPRENEURSHIP

    | Grade | Lab | Other | Unit | CIP and Field Code | Admin. Unit | Wed-Year | HCU Grade |
    |-------|-----|-------|------|-------------------|-------------|----------|-----------|
    | 1.00  | 0.00| 0.00  | 1.00 | -520716016        | 1780        | 25-16    | Level 2    |

    Approval recommended by:
    R. Duane Ireland  1-21-15
    Department Chair or Program Chair (Type Name & Sign)  Date
    Dean of College  3/27/15

    Submitted to Coordinating Board by:
    Associate Director, Curricular Services  07/14

    Questions regarding this form should be directed to Sandra Williams at 845-8301 or sandra.williams@tamu.edu
    Curricular Services - 07/14
MGMT 261 “Introduction to Entrepreneurship” Spring 2015

Instructor: Don Lewis  
E-mail: dlewis@mays.tamu.edu

Cell: 979-229-1022  
Office & Hours: 1700 Research Parkway

Class Times: M 4:35pm – 5:50pm  
Suite 150 (Startup Aggieland)

TA: Clarissa Cosca  
E-mail: cosca1021@tamu.edu

Note class is held at the new Start-up Aggieland location, 1700 Research Parkway, Suite 150 in the Research Park, Parking is free. Bus 5 (Bush School) stops outside of building.

Class Website:  http://ecampus.tamu.edu

Startup Aggieland Website:  http://startupaggieland.tamu.edu

Please Download the Start UP Aggieland App for your Android or iPhone

Course Description and Prerequisites:

The only prerequisite for this course is being selected and participating in our Startup Living Learning Community.

MGMT 261 is an introductory entrepreneurship course open to all freshmen in any major. It is intended to expose students to the mindset of entrepreneurship thru interaction with successful entrepreneurs and practical hands on activities for exploring the 21st Century global entrepreneurial economy. This class is designed to complement the new Entrepreneurial Living Learning community which has an inaugural fall 2014 housing component.

For this class entrepreneurship is approached thru a process of acting and thinking, as an attitude and a behavior. Students will have the opportunity to explore the innovative self, through creativity and innovation activities. We will also investigate entrepreneurial careers and entrepreneurial traits that can be applied in virtually any organizational setting. Students will be exposed to entrepreneurs in various stages of development as well as in various environments. There are several field trips associated with this class.

A unique portion of this class is the peer mentors who are typically seniors at TAMU. Peer mentors work with the MGMT 261 freshman and provide guidance and TAMU life experience. Peer mentors are assigned a freshman group of 3-4 students. Mentors are expected to work throughout the semester with their assigned group to complete activities and offer guidance. Mentors are expected to be in attendance for the major deliverable of the group. Mentors may also attend all outings for the class.
Learning Objectives for the 261 Entrepreneurship Course

After Successful completion of this course students should be able to:

1) **Describe** the role entrepreneurs play in our society, their characteristics and competencies and specific entry paths into becoming an entrepreneur. Students should be able to identify those traits in others and in themselves.

   *The following activities/exercises may be employed to enhance these learning outcomes:*
   - Student personality profiles
   - Interviews with entrepreneurs and others in the field
   - Guest speakers in the field of entrepreneurship
   - Lectures and other readings

2) **Catagorize** potential business opportunities and identify the resources required to capitalize on these opportunities. The student should also be able to apply various techniques to facilitate idea generation and opportunity recognition.

   *The following activities/exercises may be employed to enhance this learning outcome:*
   - Stanford value exercise
   - Spotting Ideas from different places exercise
   - NAICS/SIC code identification and Library visit
   - Lectures and readings

3) **Locate, identify and efficiently use** the West Campus Library (WCL) resources,

4) **Identify** faculty and programs at TAMU and within the Bryan College Station community that will further assist in the development of the student’s entrepreneurial propensity.

   *The following activities/exercises may be employed to enhance this learning outcome:*
   1. Risk and reward relationship activities (gaming; poker, 42)
   2. Networking and community involvement,
   3. The value of information and the availability at TAMU
      - Location of and how to use them
      - Faculty assets and programs for entrepreneurship at TAMU
      - Professional writing and proofing resources (University Writing Center Turnitin.com, other sourcing)
   5. Understanding and applying successful strategies for group collaboration
      - Best practices in group communication
      - Leadership styles and effectiveness
   7. The importance of networking
      - Understanding the stakeholders
      - Meet local entrepreneurs
      - Visit Chamber, SBDC, RVP
      - Brand your own legacy

What will be the indicators that students have achieved these learning outcomes?

**Assessment:**

1. Class participation and attendance at events
2. Assignments, written reports and presentations

After successfully completing this class, students will have developed their management-process skills including persuasion, presentation, team building, decision-making, planning, and problem solving in an entrepreneurial context.
Grading
This class is graded by a mark of either pass or fail. The standard 4.0 grading system will not be used. There are several assignments and activities listed at the end of this document. To receive a passing mark you will need to attend, participate and satisfactorily complete the majority of these activities or assignments. Specific descriptions of the assignments are provided on E-Campus.

There are 2 types of assignments in this course; Individual and Group.

Individual Assignments:

*Participation Points*
Students are expected to complete the class assignments as required and participate in class discussions, exercises and events. It is important to be in class in order to participate, particularly when another group is presenting or guest speakers are present. The participation portion of a student’s grade will be based on the instructor’s final evaluation of the above and an optional cumulative peer review.

- Resume
- Personal Profile
- Useful Website assignment

- Reflection Journal and Summary- Guest speakers and activities are a significant part of the course and are meant in part to stimulate personal reflection. Each student is required to complete a brief (1 or 2 paragraphs) summary takeaway or respond to a specific question or prompt for each activity or speaker. Journal entries should be uploaded to E-Campus within 3 days after each class meeting. A final paper including the original entries plus a thoughtful discussion of trends and insights about the activities of the semester is due by end of semester.

Possible Group Assignments:
Students must realize that group/team involvement is required in this course. Groups will be kept to 3-5 member teams. A major part of your grade is earned from the group’s activities. There are inherent difficulties with group involvement. Experience shows team members will have different opinions, levels of participation in activities and an overall sense of value regarding outcomes. You should prepare yourself for these obstacles and develop resourceful and innovative ways to complete the assignments. Comments from previous classes indicate that those groups establishing communication systems, delegating responsibilities and addressing early and directly members not participating are the key to successful outcomes.

- Interview with an Entrepreneur – By interviewing successful entrepreneurs we can learn about the mindset and attitudes that have helped them. You will ask a prescribed set of questions plus other questions you may have, note their responses and your thoughts on their responses. (2 pages)

- Final Report (press release) - Groups are to develop a press release regarding their activities for the semester.
• **Service Work for Elevator Pitch Competition:** Groups are to assist in the planning organizing and implementation of the 10/25 Elevator Pitch Competition at Start Up Aggieland.

• **Out of Class Activities:** Each group will be assigned an out of class activity that will require project management and coordination skills. Groups will be asked to take ownership of their assigned activity and work with other students to coordinate and complete the activity. Partial lists of activities are listed below for fall and spring:

  1. **$10 Start-up Business** – a student group is to organize an activity where each student team in the class is to start their own business using $10 or less (provided by instructor). They are allowed to spend more money on their businesses, but the additional funding has to come from their profits. Students run their businesses for a designated period of time and keep detailed diaries of their thoughts, actions, and responses during the process.
  2. **Strength and Weakness Test** - a student group will be responsible for coordinating and administering a professional strengths and weakness test for all other members of the class. Funding will be provided by the instructor.
  3. **Dinner/Pool Party and Texas Hold `em the Game of Chance** a student group will organize a late afternoon dinner and pool party where students will learn how poker and entrepreneurship relate to each other.
  4. **Chamber/SBDC Visit** – a student group will organize an outing to the Bryan/College Station Chamber of Commerce and Small Business Development Center and listen to a presentation by the directors of these organizations.
  5. **City Council Visit** – a student group will organize an outing to either the City of Bryan or College Station City council meeting
  6. **Etiquette Dinner** a student group will organize a dinner where students will learn the proper etiquette for business occasion and job interviews
  7. **Guest Speakers** – a student group will be responsible for contacting, welcoming and facilitating a preselected guest speaker to the classroom or other place of business
  8. **Guest Speakers** – a student group will be responsible for contacting, welcoming and facilitating a preselected guest speaker to the classroom or other place of business
  9. **Ropes Course** – a student group will be responsible for organizing a class outing to a local ropes course
  10. **Vote and a Meal w First Fridays Outing** – a student group will be responsible for making sure all other students are registered to vote and able to vote in the November election also this group will organize an outing to downtown Bryan to experience the entrepreneurial culture (dinner & free salsa lessons to follow).
  11. **On The Street Interviews “What is Startup Aggieland”** – this student group will visit various locations on campus and film and present student interaction to the question “What do you know about start up Aggieland”
  12. **B/CS Scavenger Hunt** – students will organize a local scavenger hunt based on visiting various locations (SBDC, Courthouse, Senior Loan Officer at a Bank, Chamber of Commerce, City Hall etc).
  13. **Tour of Geekdom in San Antonio** – a student team will organize a trip to a startup accelerator in San Antonio.
14. Idea Bounce – a student group will be responsible for organizing an inflatable bounce tent event where students will then compete in an Idea Bounce contest. Teams will develop, improve and exchange a series of new business ideas.
15. Entrepreneurial LLC Selection Committee – a student group will organize a class activity revolving around organizing, reviewing and selecting incoming freshman for the fall LLC.
16. Dinner at Hullabaloo Hall- a student group will organize a dinner and visitation of the facilities, amenities and room location of our LLC in f Hullabaloo Hall.
17. Tour of Baylor Entrepreneurial Dorms - a student group will arrange a visit to Waco at Baylor University to experience an existing entrepreneurial community.
18. Tour Shell Technology Center and Meet Shell Gamechangers – a student group will coordinate a day trip to Houston to visit the facility.
19. Service Opportunities – student groups will organize support to a local service organization (Lemonade Day, Senior Awards Banquet, Ideas Challenge, Aggie Day etc)
20. Aggie CEO Dinner- student group will be responsible for organizing a dinner and program with former student CEO’s from across the country.

In addition, at the end of the semester, a confidential peer evaluation form will be offered to each team member to evaluate their respective team member’s participation. Below average peer reviews will be reflected in the final grade.

Attendance and Absences

Unexcused absences on the day of an assignment or examination will result in a grade of zero (0) for that exercise. There are no make-ups for any class assignment or exam without a university excused absence. This policy is strictly enforced.

Make-up Policy: If an absence is excused, the student will be allowed to make up work within 30 calendar days from the last day of the absence. To be excused the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence, and provide appropriate documentation for the absence. In cases where advance notification is not feasible (e.g. accident or emergency) the student must provide notification by the end of the second working day after the absence, including an explanation of why notice could not be sent prior to the class. Excused Absences: The reasons absences are considered excused by the university are listed on the following link (Student Rule 7) for details (http://student-rules.tamu.edu/rule07). The fact that these are university-excused absences does not relieve the student of responsibility for prior notification if possible and documentation. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code.

Special Information for Students:

Students with Disabilities Act

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation
requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 979-845-1637. For additional information visit http://disability.tamu.edu.

**Students with Special Needs**

Any student who could require assistance in the event of a necessary evacuation of the building in which this class is taught are asked to notify the instructor so that individuals can be identified to assist him/her during an evacuation.

**Startup Aggieland Food & Beverage Policy**

We have a very relaxed, casual classroom environment at Startup Aggieland and in co-working spaces like our Conference Room and Lounge. That said, we want to maintain the “livability” of our public spaces and classroom, called the Think Tank, for students in future years. As such, it is necessary for you to pick up after yourself when you consume beverages or food in any areas of Startup Aggieland. We consider you part of the Aggie Family. In our family, we look after one another and respect each others’ rights so please respect your classmates and fellow students by not using tobacco products or bringing animals into Startup Aggieland (unless approved by the instructor). If you see some leftover food, beverages or trash, please be a Good Ag and put what seems like trash into a trash receptacle. Your assistance in keeping our learning and launching environment “livable” is greatly appreciated.

**Academic Honesty**

As commonly defined, plagiarism consists of passing off as one’s own words, writings, etc., which belong to another. Therefore, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you have the permission of that person. In addition, all materials generated for this class are copyrighted. As such, you do not have the right to copy the handouts, unless I specifically grant permission. If you have any questions concerning plagiarism, please consult the latest issue of the *Texas A&M University Student Rules*, under the section entitled “Scholastic Dishonesty.”

**AGGIE HONOR CODE**

“An Aggie does not lie, cheat, or steal or tolerate those who do.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. For additional information please visit: [http://aggiehonor.tamu.edu/](http://aggiehonor.tamu.edu/)
<table>
<thead>
<tr>
<th>Date</th>
<th>In Class Lectures and Activities</th>
<th>Assignments</th>
<th>Deadlines</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>MLK - Holiday Introduction to course</td>
<td>Overview of Semester Assignments</td>
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<tr>
<td>1/19</td>
<td>- Discuss Assignments and Grades</td>
<td>4 Individual Assignments (1-4):</td>
<td>1. Personal Profile due by class time. See E-Campus.</td>
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<td></td>
<td>- What is Startup Aggieland/What I want you to know!</td>
<td>1. Personal profile</td>
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<td>- Facebook page/Expectations for Class/Canned food drive</td>
<td>2. Define Incubator/Accelerator</td>
<td>2. All students look up definition of Incubator/Accelerator definition</td>
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<td>- Roll call</td>
<td>3. Useful Website Assignment</td>
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<td>- Historical Perspective</td>
<td>4. Resume</td>
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<td>- Discuss Personal profile/Resumes/Useful Website assignments</td>
<td>5. State-of-the-Group Report</td>
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<td>- Look up Incubator vs. Accelerator</td>
<td>6. Final Peer Review</td>
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<td>7. Final Press Release due</td>
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<td>8. Reflection Journal and Summary</td>
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<td>2 Group Assignments :</td>
<td>3. Useful Website Assignment due by class time. Turn in hard copy at beginning of class.</td>
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<td>A. Interview an Entrepreneur</td>
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<td>B. Group Activity Choice</td>
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<td>Week 2</td>
<td>Team Building– Meet at Hullabaloo Hall E-Society Presentation/E-Campus demonstration,</td>
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<tr>
<td>1/26</td>
<td>- Discuss Personal Profile assignment</td>
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<td>- Introduce Useful Website Assignment</td>
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<td>- Discuss Group Activities</td>
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<td>- Name tags created, pictures taken, Bingo Exercise</td>
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<td>- Form Groups/Group introductions</td>
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<td>- Fun Exercise</td>
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<td>- Meet Mentors /Select Group Activities</td>
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<td>Week 3</td>
<td>Strength’s Test</td>
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<td>4. Resume Upload a copy of your resume to E-learning</td>
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<tr>
<td>2/2</td>
<td>Retreat @ Mr. Don Lewis’ Barn</td>
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<td>Week 4</td>
<td>Dinner Pool Party</td>
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<td>2/9</td>
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<td>Week 5</td>
<td>NO CLASS</td>
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<td>2/16</td>
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<td>Vote &amp; First Friday in Downtown Bryan</td>
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<td>Week 6</td>
<td>Etiquette Dinner</td>
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<td>2/23</td>
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<td>Week 7</td>
<td>3/2</td>
<td>Guest Speaker</td>
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<td>Week 8</td>
<td>3/9</td>
<td>San Antonio Trip – All Day</td>
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<td>Week 9</td>
<td>3/16</td>
<td>SPRING BREAK $10 Business Idea</td>
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<td>Football Game @ Kyle Field</td>
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<td>Week 10</td>
<td>3/23</td>
<td>TEEX Visit</td>
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<td>Week 11</td>
<td>3/30</td>
<td>$10 Business Idea Follow-up</td>
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<td>Week 12</td>
<td>4/6</td>
<td>Startup Aggieland Interviews on Campus</td>
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<td>Week 13</td>
<td>4/13</td>
<td>Interview Follow-up Jacket Fittings Photos</td>
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<td>Week 14</td>
<td>4/20</td>
<td>LinkedIn &amp; Follow-up</td>
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<td>Week 15</td>
<td>4/27</td>
<td>REDEFINED DAY (students go to Friday classes)</td>
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<td>Final -TBD Final -TBD</td>
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<td>Week 15</td>
<td>5/4</td>
<td>Final -TBD Final -TBD</td>
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A. Interview an Entrepreneur

6. Final Peer Review

7. Final Press Release due

8. Reflection Journal and Summary
### Assignments, Exams and Point Values

<table>
<thead>
<tr>
<th>Individual:</th>
<th>Points</th>
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<tbody>
<tr>
<td>Participation includes:</td>
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<tr>
<td>Personal profile</td>
<td>50</td>
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<tr>
<td>Useful Websites Assignment –</td>
<td>50</td>
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<tr>
<td>State of the Group Report &amp; Final Peer</td>
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<td>Resume</td>
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<td>Reflection Journal and Summary</td>
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<tr>
<td>In-Class Participation/Attendance</td>
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<tr>
<td><strong>Total Individual Points Available</strong></td>
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<table>
<thead>
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<th>Group Activities:</th>
<th>Points</th>
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<tbody>
<tr>
<td>Participation includes:</td>
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<td>Group Activity Choice</td>
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<tr>
<td>Final Report (press release)</td>
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<tr>
<td>Interview Entrepreneur Assignment</td>
<td>50</td>
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<td><strong>Total Group Points Available</strong></td>
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Note: In-class participation points will be awarded after the final is completed.
Note: All students please review the dates on this syllabus and let me know if there are inaccuracies.

**Final Grades:** Pass 1000-700 / Fail 699-below
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

Form Instructions:
1. Course request type:  
   - [ ] Undergraduate  
   - [ ] Graduate  
   - [ ] First Professional (DDS, MD, JD, PharmD, DPA)
2. Request submitted by (Department or Program Name):  
   Department of Management
3. Course prefix, number and complete title of course:  
   MGMT 477 Entrepreneurial Consulting and Development
4. Catalog course description (not to exceed 50 words):
   Entrepreneurial Consulting and Development (3-0). Credit 3. Application of current lean startup methodologies working directly with existing student entrepreneurs and mentors in preparing for the launch of a real business at the student incubator, Startup Aggieland; act as advocates and consultants assisting with organizational structure, marketing and market validation, financial analysis and risk assessment. Prerequisites: Junior or senior classification and approval of instructor.

5. Prerequisite(s):  
   Prerequisites: Junior or senior classification and approval of instructor

6. Is this a variable credit course?  
   - [ ] Yes  
   - [X] No  
   If yes, from ________ to ________
7. Is this a repeatable course?  
   - [ ] Yes  
   - [X] No  
   If yes, this course may be taken ________ times.
8. Will this course be repeated within the same semester?  
   - [ ] Yes  
   - [X] No
9. Will this course be submitted to the Core Curriculum Council?  
   - [ ] Yes  
   - [X] No
10. How will this course be graded?  
    - [X] Grade  
    - [ ] S/U  
    - [ ] P/F (CLAS)

This course will be:
- [ ] required for students enrolled in the following degree program(s) (e.g., B.A. in history)
- [ ] an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

BBA MGMT

If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

12. [X] I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-control-basics-for-distance-education).

13. Prefix  
   Course #  
   Title (excluding punctuation)
   MGMT 477  
   ENTREPRENEUR CONSULTING & DEV

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Approval recommended by:

R. Duane Ireland  
Department Head or Program Chair (Type Name & Sign)  
Date  

Nancy Simpson  
Chair, College Review Committee  
Date  

Martha Laddier  
Dean of College  
Date  

Submitted to Coordinating Board by:

Chair, GC or UCC  
Date  

Effective/Date:

Questions regarding this form should be directed to Sandra Williams at 945-8201 or sandra.williams@tamu.edu.
Curricular Services – 07/14
MGMT 477: Entrepreneurial Consulting and Development  
Spring 2015

Instructor:  Don Lewis  
E-mail:  dlewis@mays.tamu.edu
Cell:  979-229-1022
Office & Hours:  Startup Aggieland Suite 150 by appointment
TA:  Clarissa Cosca  
Email:  cosca1021@tamu.edu
Class Times:  W 06:00pm -8:30pm

Note class is held at the new Start-up Aggieland location, 1700 Research Parkway, Suite 150 in the Research Park, Parking is free. Bus 5 (Bush School) stops outside of building.

Course Materials:  LaunchPad Central, a cloud-based course management application (available by subscription at launchpadcentral.com. Each student must purchase an individual subscription for approximately $50).
Register at https://launchpadcentral.com/signup, Organization Code = see instructor

Steve Blank, The Startup Owner’s Manual
Note: Kindle Reader version is available at Amazon.com

Alexander Osterwalder & Yves Pigneur, Business Model Generation

Recommended Text:  Eric Ries, The Lean Startup

Class materials and content are based extensively on the ideas and course materials created by Steve Blank and Bob Dorf. Learn more about Steve Blank and see examples of coursework using a similar syllabus at www.steveblank.com.

Class Website:  http://ecampus.tamu.edu  Startup Aggieland Website:  
http://startupaggieland.tamu.edu

Catalog Course Description:  Application of current lean startup methodologies working directly with existing student entrepreneurs and mentors in preparing for the launch of a real business at the student incubator, Startup Aggieland; act as advocates and consultants assisting
with organizational structure, marketing and market validation, financial analysis and risk assessment. Prerequisites: Junior or senior classification and approval of instructor. Prerequisite: Junior or senior classification and approval of instructor.

**Expanded Description:** This is the final course in a series of developmental and implementation approaches to a student led incubator/accelerator named Startup Aggieland. This course will be focused on implementing the resources, curriculum and activities necessary for facilitating the progress of Startup Aggieland’s student entrepreneurs (Treps). This course and associated programs will be designed and promoted as a hands on experiential approach to learning offered to those individuals serious about considering entrepreneurship and small business as a career or helping those individuals or teams who are in that process. Students in this class will work directly with existing and incoming Treps to develop their business using various tools recommended for implementation by previous classes. This course provides real world, hands-on learning on what it’s like to start a company. This class is not about how to write a business plan. It’s not an exercise on how well a student can use the library to research markets. And the end result is not a PowerPoint slide deck for a venture capitalist presentation. This is an experiential class – essentially a lab, not a theory or “book” class. Our goal, within the constraints of a classroom and a limited amount of time, is to create an entrepreneurial experience for you with all of the pressures and demands of the real world in an early stage start up. You will be talking to customers, partners, and competitors, as you encounter the chaos and uncertainty of how a startup actually works. You’ll work in teams learning how to turn a great idea into a great company. You’ll learn how to use a business model to brainstorm each part of a company and the customer development and market validation process to get out of the classroom to see whether anyone other than you would want or use your product. Finally, based on the customer and market feedback you gather, you will use agile development to rapidly iterate your product to build something customers would actually use and buy.

**Class Culture:** Startups communicate much differently than inside a university or a large company. It is dramatically different from the university culture most of you are familiar with. At times it can feel brusque and impersonal, but in reality is focused and oriented to create immediate action in time- and cash-constrained environments. The instructors for this course have limited time and we will push, challenge, and question you in the hope you will quickly learn. The instructors will be direct, open, and tough – just like the real world. We hope you can recognize that these comments aren’t personal, but part of the process.

We also expect you to question us, to challenge our point of view if you disagree, and engage in a real dialog with the teaching team. This approach may seem harsh or abrupt, but it is all part of our wanting you to learn to challenge yourselves quickly and objectively, and to appreciate that as entrepreneurs you need to learn and evolve faster than you ever imagined possible.

**Team Organization:** This class is team-based. Working and studying will be done in teams. A team will consist of a TREP/s and a wrangler. Team projects can be software, a physical product, or a service of any kind. We will assign wranglers to TREP teams. The teams will self-organize and establish individual roles on their own. Besides the instructors and TA, each team will be assigned an industry mentor. The mentor will be an experienced entrepreneur, industry expert or other person with significant business experience, and his or her role will be to provide assistance and support. Each team will be required to meet weekly with its assigned mentor.
Amount of Work  NOTE: This class requires a large amount of work on the part of every student. The intent of this class is to prepare student entrepreneurial teams to launch a business so the workload will be more than in most classes. Getting out of the classroom is what the effort is about. It’s not about the lectures. In fact, lectures will be provided outside of the actual class sessions, using online videos recorded by Steve Blank. You will be spending a significant amount of time in between each of the class sessions talking to customers. This class will demonstrate what startups and entrepreneurship is like in the real world: chaos, uncertainty, impossible deadlines insufficient time, conflicting input, etc. This class pushes many people past their comfort zone. This is what startups are like. The pace and the uncertainty may increase as the class proceeds.

The Flipped Classroom: Unlike a traditional classroom where the instructor presents lecture material, our lectures are mainly online at https://www.udacity.com/course/ep245. This is the free site that anyone can access. A student can access these same videos and more using their subscription to LaunchPad Central. Watching the assigned lectures are part of your weekly homework. We expect you to watch the assigned lectures and we will use time in class to discuss questions about the lecture material and progress/feedback on your business model search and product development.

Learning Objectives for the MGMT 477 Course  
After Successful completion of this course students should be able to:

1) Describe: Customer Validation process and the guiding principles for startups deploying the Customer Development process. The following activities/exercises may be employed to enhance these learning outcomes:
   - Utilization of Launchpad Central
   - Weekly Quizzes on E-Campus
   - Guest speakers in the field of entrepreneurship and Lean Startup Methodology
   - Lectures and other readings

2) Identify: The components of the Business Model Canvas and apply the concepts to a potential business opportunity. The student should also be able to apply various techniques to facilitate customer interviews.
3) **Locate, identify and efficiently use** the West Campus Library (WCL) resources,
4) **Identify** faculty and programs at TAMU and within the Bryan College Station community that will further assist in the development of the student’s entrepreneurial propensity.

*The following activities/exercises may be employed to enhance this learning outcome:*

1. Risk and reward relationship activities (gaming; poker, 42)
2. Networking and community involvement,
3. The value of information and the availability at TAMU
   - Location of and how to use them
   - Faculty assets and programs for entrepreneurship at TAMU
   - Professional writing and proofing resources (University Writing Center Turnitin.com, other sourcing)
4. Identifying faculty and programs at TAMU and within the Bryan College Station community that will further assist in the development of the student’s entrepreneurial propensity.
   - Business model canvas
   - Professional writing and proofing resources (University Writing Center Turnitin.com, other sourcing)
   - Networking and community involvement

5. Understanding and applying successful strategies for group collaboration
   - Best practices in group communication
   - Leadership styles and effectiveness

6. The importance of networking
   - Understanding the stakeholders
   - Meet local entrepreneurs
   - Visit Chamber, SBDC, RVP
   - Brand your own legacy

**Deliverables**

- A data supported go no-go decision at the end of the course on whether or not to launch the startup/product/service
- Teams building a physical product/service must show a minimal viable product.
- Teams building a web product need to build the site, create demand and have early-adopter customers using it.
- Your weekly entries on Launchpad Central is an integral part of your deliverables.
- Your team will present a weekly in-class summary of progress and lessons learned, as well as a final presentation and demo.
- Overall, teams will experience and learn from a real world, hands-on experience on what it’s like to actually start a tech company and launch a product.

**Grading Criteria:**

This course is team-based and 85% of your grade will come from your team progress and final project. The grading criteria are broken down as follows:

10% Class participation **10 points**

40% Demonstrated out-of-the-building progress as measured by entries into LaunchPad Central platform **40 points**

Using LaunchPad Central, team members must:

1) update their business model canvas weekly
2) Identify which team member did which portion of the work.

3) Detailed report on what the team did each week

20% The team weekly “lesson learned” presentation 20 points

30% The team final presentation and product/service demo 30 points

Final Grades: A=100-90  B=89-80  C=79-70  D=69-60  F=59-below

Attendance and Absences

Unexcused absences on the day of an assignment or examination will result in a grade of zero (0) for that exercise. There are no make-ups for any class assignment or exam without a university excused absence. This policy is strictly enforced.

Make-up Policy: If an absence is excused, the student will be allowed to make up work within 30 calendar days from the last day of the absence. To be excused the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence, and provide appropriate documentation for the absence. In cases where advance notification is not feasible (e.g. accident or emergency) the student must provide notification by the end of the second working day after the absence, including an explanation of why notice could not be sent prior to the class. Excused Absences: The reasons absences are considered excused by the university are listed on the following link (Student Rule 7) for details (http://student-rules.tamu.edu/rule07). The fact that these are university-excused absences does not relieve the student of responsibility for prior notification if possible and documentation. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code.

AGGIE HONOR CODE: “An Aggie does not lie, cheat, or steal or tolerate those who do.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. For additional information please visit: http://aggiehonor.tamu.edu/

Americans with Disabilities Act (ADA) Policy Statement
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.
Teaching Team

Don Lewis  
Mays Business School  
dlewis@mays.tamu.edu  
979.229.1022

Dr. Adam Steele  
Mays Business School  
adam@bcstartup.com  
814.574.2807

Dr. Richard Lester  
Mays Business School  
rlester@mays.tamu.edu  
979.862.7091

Class Roadmap

Each week’s class is organized around:

- Student team presentations on “lessons learned” from getting out of the building and iterating or pivoting their business model.
- Comments and suggestions from other teams, and the teaching team, on the lessons learned.
- An online lecture, viewed prior to each week’s class, on one of the 9 building blocks of a business model. The online class lectures are available from LaunchPad Central.
- Each team will capture their progression in learning by keeping a log of customer interviews, hypothesis etc using LaunchPad Central.

Culture:

1. A mindset of hypothesis-testing, (running a series of experiments outside the building, determining the insights/results from those experiments, and articulating the next steps to be taken,) not execution.
2. Active participation by all team members.
3. All members are held accountable for team performance.
4. High-speed pace and tempo.
5. Teams average 100 customer contacts (not including focus groups and surveys).
6. Bring your sense of humor—without it, you will suffer.

Agenda for Class Sessions

Each class session is from 6-8:30 pm Wednesdays. We will take a five minute break at 7pm each class. Please be prepared to present your team’s progress in every class session. Teams will present during each class session for 10 to 15 minutes each. Depending on the number of teams participating we will potentially break up into several smaller groups. If your team has not presented the prior class session, you will be expected to present during the next class. Each team presentation will follow the same format of presenting the overall business model canvas, the hypothesis that was tested during the prior week, the results of the test, and the learning that came from that test. After the presentation, the teaching team will provide feedback about the presenting team’s approach, methodology, execution, and conclusions. The teaching team may also request input from other students.
Week:

Class 1: Organization and Description of class to Wranglers/Mentors
Class 2: Intro, Business Models, Customer Development
Class 3: Value Proposition
Class 4: Customers
Class 5: Channels
Class 6: Customer Relationships Get/Keep/Grow
Class 7: Revenue Model
Class 8: Partners
Class 9: Resources and Costs
Class 10 and 11: Lessons Learned Presentations
Class 12, 13 and 14 Next step and execution decision planning for next semester
Texas A&M University  
Departmental Request for a New Course  
Undergraduate • Graduate • Professional  
• Submit original form and attach a course syllabus.

Form Instructions:
1. Course request type:  
   ☑ Undergraduate  ☐ Graduate  ☐ First Professional (DDS, MD, JD, PharmD, DVM)

2. Request submitted by (Department or Program Name):  
   Department of Statistics

3. Course prefix, number and complete title of course:  
   STAT 182. Foundations of Statistics

4. Catalog course description (not to exceed 50 words):  
   Elementary topics in statistics; data collection; design of experiments; confidence intervals, hypothesis testing; ethics in statistics; the role of statistics in industry, the health profession, and the sciences.

5. Prerequisite(s):  
   Major in statistics only
   Cross-listed with:  
   Stacked with:  
   Cross-listed courses require the signatures of both department heads.

6. Is this a variable credit course?  
   ☐ Yes  ☑ No  
   If yes, from ________ to ________

7. Is this a repeatable course?  
   ☐ Yes  ☑ No  
   If yes, this course may be taken ________ times.

   Will this course be repeated within the same semester?  
   ☐ Yes  ☑ No

8. Will this course be submitted to the Core Curriculum Council?  
   ☐ Yes  ☑ No

9. How will this course be graded:  
   ☑ Grade  ☐ S/U  
   ☐ P/F (CLMD)

10. This course will be:  
    a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)  
       B.S. in Statistics
    b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

11. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

12. ☑ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

13. Prefix  Course #  Title (excluding punctuation)  

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Approval recommended by:  
Valen Johnson  
Department Head or Program Chair (Type Name & Sign)  Date

Chair of College Review Committee  Date

Department Head or Program Chair (Type Name & Sign)  Date
(if cross-listed course)

Dean of College  Date

Submitted to Coordinating Board by:  
Chair, GC or UCC  Date

Associate Director, Curricular Services  
Date

Questions regarding this form should be directed to Sandra Williams at 845.8201 or sandra.williams@tamu.edu  
Curricular Services – 07/14
Course Title, number, and term: Foundations of Statistics, Stat 182, Spring 2016

Instructor, office number, office hours, email address: TBA

Description: This is an introductory course for beginning statistics majors designed to give students an overview of descriptive and inferential statistics. Topics to be covered include descriptive statistics, data collection and design of experiments, confidence intervals and hypothesis testing. The role of statistics in industry, the health profession and the sciences will be presented by speakers from these fields.

This is a writing-intensive (W) course. As such, a substantial portion of the students’ grades will be based on their demonstrated ability to communicate effectively through writing. The class cannot be passed without passing the written requirements.

Learning outcomes: Upon completion of this course, students will be able to:

- Identify and distinguish between observational and experimental studies.
- Describe the kinds of questions that can be answered using statistics.
- Think critically about data.
- Communicate statistical understanding effectively through writing.

Textbook: None required.

Prerequisites: Major in statistics only.

Grading Policies: There will be two 1000-word papers, each worth 120 points. Class attendance is also worth 10 points. Students will be allowed one unexcused absence. After that, each unexcused absence will result in a loss of 30 percent of the class attendance portion of the grade. Students with no more than one unexcused absence will be given the full 10 points toward their overall course grade. The overall course grade will be determined as follows:

\[ A = \frac{225 - 250}{100}, \quad B = \frac{200 - 224}{100}, \quad C = \frac{175 - 199}{100}, \quad D = \frac{150 - 174}{100}, \quad F < 150. \]

Papers:

- Paper 1: The minimum length of this paper is 1000 words. Find a case study in which an exploratory analysis of real data was carried out. What was the scientific question of interest? How was the data collected? What descriptive techniques were used to explore the data, and what conclusions were reached on the basis of this exploratory analysis?
- Paper 2: The minimum length of this paper is 1000 words. Find a case study in which an inferential analysis of real data was carried out. What was the scientific question of interest? How was the data collected? What inferential techniques were used to analyze the data, and what conclusions were reached on the basis of this inferential analysis?

Attendance and Make-up Policies: Attendance is mandatory. If a student has a university excused absence, the student can make up the missed lecture by writing a ½ page summary over the topic missed in the lecture. If a university-excused absence falls on a day on which a paper is due, the student
must turn in the paper as soon as possible after returning from the absence. See Student Rules, http://studentrules.tamu.edu/rule07, for what constitutes an excused absence.

**Weekly schedule of Lectures:**

**Week 1:** Introduction to statistics.

- Aims of inferential statistics and the types of questions we can answer using statistics.
- Best practices in statistical writing, as individuals and as part of a collaborative team.
- Group collaborations to proof-read a case study writeup.

**Paper 1 assigned.**

**Week 2:** Descriptive statistics.

- Introduction to data sets and variables.
- How do we summarize data using graphs and statistics.
- Using statistics to recognize patterns and compare outcomes from different treatment groups.

**Week 3:** Probability.

- Fundamental ideas behind quantifying chance.
- Why we expect rare events to occur in very large populations.

**Week 4:** Data collection.

- What are lurking (auxiliary variables) and why they pose a problem.
- Design of experiments.

**Draft of paper 1 due.**

**Week 5:** Observational studies.

- Types of bias, the importance of wording in surveys.
- Feedback on paper 1 returned.

**Week 6:** Sampling distributions.

- Introduction to sampling variability with the goal of showing students why point estimates are not sufficient for estimating a population parameter.
- Discussion of the paper “The most dangerous equation in the world”. This paper illustrates how a lack of understanding of the CLT resulted in educators believing small schools are better than larger schools by only looking at the size of the top schools (generally small) and not looking at the size of the worst schools (also generally small).

**Week 7:** Overview of confidence intervals and how they are used.
Final version of paper 1 due.

Week 8: Introduction to hypothesis testing.

What questions can be studied.
Ideas behind type I and type II errors.

Paper 2 assigned.

Week 9: Comparing means.

Continued discussion of hypothesis testing.

Reinforcement of principles of data collection.

Week 10: Correlation and regression.

Week 11: Two-way tables.

Examples from the health literature of how large sample sizes lead to small p-values even though the effect size is very small.

Draft of paper 2 due.

Week 12: Outside speaker from industry on how companies are using statistics.

Feedback on paper 2 returned.

Week 13: Outside speaker from the health field on how statistics is changing the field of medicine.

Week 14: Scientist on the role of statistics in science.

Final version of paper 2 due.

STATEMENT ON DISABILITIES: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

STATEMENT ON PLAGIARISM: The handouts used in this course are copyrighted. By “handouts”, I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission. As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if
you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, consult the latest issue of the Texas A&M University Students Rules, under the section “Scholastic Dishonesty”.

**ACADEMIC INTEGRITY STATEMENT:** “An Aggie does not lie, cheat or steal, or tolerate those who do.” (http://aggiehonor.tamu.edu)
Texas A&M University
Departmental Request for a New Course
Undergraduate + Graduate + Professional
• Submit original form and attach a course syllabus.

Form Instructions
1. Course request type: ☑ Undergraduate ☐ Graduate ☐ First Professional (DDS, MD, JD, PharmD, DVM)
2. Request submitted by (Department or Program Name): Department of Statistics

4. Catalog course description (not to exceed 50 words):
Statistical programming in R and SAS; random number generation; design of simulation studies; interactive and dynamic statistical graphics; parallel computing in statistics.

5. Prerequisite(s): STAT 212; junior or senior classification or approval of instructor

Cross-listed with: Stacked with:

Cross-listed courses require the signature of both department heads.

6. Is this a variable credit course? ☐ Yes ☑ No 
   If yes, from _____ to _____

7. Is this a repeatable course? ☐ Yes ☑ No
   If yes, this course may be taken _____ times.
   Will this course be repeated within the same semester? ☐ Yes ☑ No

8. Will this course be submitted to the Core Curriculum Council? ☐ Yes ☑ No

9. How will this course be graded: ☑ Grade ☐ S/U ☐ P/F [CLA/M]

10. This course will be:
   a. required for students enrolled in the following degree programs(s) (e.g., B.A. in history)
      B. S. in Statistics
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

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13. Prefix Course # Title (excluding punctuation)

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Approval recommended by:

Valen Johnson
Department Head or Program Chair (Type Name & Sign) Date 3/15/15

Chair, College Review Committee Date 3/9/15

Dean of College Date 3/9-15

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845.8701 or swilliams@tamu.edu
Curricular Services – 07/14

RECEIVED MAR 1 2015
CURRICULAR SERVICES
Instructor: Professor Huiyan Sang
Office: 464B Blocker Building
Office hours: TBA
E-mail: huiyan@stat.tamu.edu

Course Description
This course covers topics on statistical computing, including statistical programming with widely used statistical software (SAS, R, etc.), random number generation, design of simulation studies, interactive and dynamic graphics, and parallel computing. Emphasis will be placed on programming and algorithms.

Prerequisites:
- STAT 212; junior or senior classification or approval of instructor

Learning Outcomes:
At the end of the semester, students will be able to:
1. implement basic tools in SAS/R to perform statistical computing.
2. apply basic methods in statistical computing, including sampling, random number generation, and parallel computing for big data in SAS/R.
3. perform exploratory data analysis and data visualization
4. analyze real data using built-in procedures and functions in SAS/R.
5. design and implement simulation studies in R

Course Website:
- All STAT 404 materials including lecture notes, data sets, SAS/R codes will be posted on eCampus.

Required Materials:
- Textbooks:
- Statistical software: we will use R (http://www.r-project.org) and SAS® OnDemand for Academics: Web Editor
- The course notes will be posted on eCampus. These notes should be printed out and brought to class.

Grades:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Component</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>Homework</td>
<td>A</td>
</tr>
<tr>
<td>20%</td>
<td>Midterm1</td>
<td>B</td>
</tr>
<tr>
<td>20%</td>
<td>Midterm2</td>
<td>C</td>
</tr>
<tr>
<td>40%</td>
<td>Final Exam</td>
<td>D</td>
</tr>
</tbody>
</table>
<pre><code>                              | F     | 0-59%  |
</code></pre>

Attendance:
- Attendance is strongly recommended, but no grade on attendance will be given.

Homework:
- Homework will be assigned every week. Homework is to be submitted online at WebAssign.
• Instructions on how to register with WebAssign will be given in class and on eCampus. The URL for WebAssign is:  
  https://www.webassign.net/student.html

• Homework will not be accepted after the due date unless you have a university-excused absence (http://student-rules.tamu.edu/rule07).

• On a number of occasions, you will be required to use SAS/R to complete the homework assignments.

Exams:
• There will be two midterm exams and a final exam.
• If you miss an exam due to a university excused absence, you must take the exam early if possible. Otherwise, you will need to take the exam as soon as you can after your return from the absence.

Schedule:

Week 1:

*Chapter 1 – Introduction to R*
- Downloading and Installing R
- Packages, Functions and Syntax
- Loading Data and Exporting Results in R
- Getting Help when Using R

Weeks 2 – 3:

*Chapter 2 – Getting to Know R*
- Different Data Types in R
- Basic Data Management
- Basic Statistical Packages and Routines
- Random Number Generation and Simulations

Weeks 4 – 5:

*Chapter 3 – Graphical Tools in R*
- Overview of Graphical Tools in R
- Lattice Graphs
- ggplot2

Weeks 6 – 7:

*Chapter 4 – Advanced Programming in R*
- Basic Function Writing
- Advanced Statistical Packages
- Parallel Computing in R
- Interface Between R and Matlab/C++/LATEX

Exam One: Monday of 6th Week

Week 8:

*Chapter 5 – Introduction to SAS*
- Introduction to SAS Environment
- Types of SAS Files
SAS Basic Data Management

Weeks 9 – 10:

Chapter 6 - SAS Basic Syntax
Procedures
SAS Syntax

Weeks 11 – 12:

Chapter 7 - Data Management in SAS
Creating SAS Datasets
Sorting and Merging SAS Datasets
Data Manipulation in SAS
Data Visualization
Outputting Data and Results in SAS

Exam Two: Monday of 11th Week

Weeks 13 – 14:

Chapter 8 - SAS Programming
SAS Functions
SAS Macros
Using SAS for Regression Models and Hypothesis Testing

Week 15:

Final Exam

STATEMENT ON DISABILITIES: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

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ACADEMIC INTEGRITY STATEMENT: “An Aggie does not lie, cheat or steal, or tolerate those who do.” (http://aggiehonor.tamu.edu)
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

Form Instructions
1. Course request type:  
   - Undergraduate [X]  
   - Graduate [ ]  
   - First Professional (DDS, MD, JD, Ph.D., DVM, etc.) [ ]

2. Request submitted by (Department or Program Name):  
   Department of Statistics

3. Course prefix, number and complete title of course:  
   STAT 408. Design and Analysis of Experiments

4. Catalog course description (not to exceed 50 words):
   Design fundamentals; completely randomized designs; blocking; factorial, nested, nested-factorial designs; incomplete designs; fractional factorial designs; confounding; general mixed factorials; split plot; analysis of covariance; crossover designs; power analysis, sample size determination.

5. Prerequisite(s):  
   STAT 212; STAT 408

6. Is this a variable credit course?  
   - Yes [ ]  
   - No [X]  
   - If yes, from _______ to_______

7. Is this a repeatable course?  
   - Yes [ ]  
   - No [X]  
   - If yes, this course may be taken _______ times.

8. Will this course be repeated within the same semester?  
   - Yes [ ]  
   - No [X]

9. Will this course be submitted to the Core Curriculum Council?  
   - Yes [ ]  
   - No [X]

10. How will this course be graded?  
    - Grade [X]  
    - S/U [ ]  
    - P/F (CLMD) [ ]

11. This course will be:  
    a. required for students enrolled in the following degree programs(s) (e.g., B.A. in history)
    - B.S. in Statistics
    b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

12. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

13. Prefix: STAT  
    Course #: 408  
    Title (excluding punctuation): Design Experiment Analysis Variance

    Lect.  | Lab  | Other | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | FICE Code |
    ------ | -----|-------|-----|------------------|-------------|------------|-----------|
    3.00   | 0.00  | 0.00  | 3.00| 2705010001       | 2740         | 16         | 17        |

    Approval recommended by:  
    Dr. Valen Johnson  
    Department Head or Program Chair (Type Name & Sign)  
    Date: 3/10/15

    Chair, College Review Committee  
    Date: 3/9/15

    Department Head or Program Chair (Type Name & Sign)  
    Date (if cross-listed course)

    Dean of College  
    Date: 3/9/15

    Submitted to Coordinating Board by:  
    Associate Director, Curricular Services

    Date:  
    Effective Date:

Questions regarding this form should be directed to Sandra Williams at 845-8201 or s hernandez@tamu.edu
Curricular Services – 07/14
Course Description: STAT 406 is intended for undergraduate statistics majors who are planning a career as an applied statistician. The course will provide an introduction to design of experiments and analysis of variance. Topics include design fundamentals, completely randomized designs; blocking; factorial, nested and nested-factorial treatment structures; incomplete designs; fractional factorial designs; confounding; general mixed factorials; split plot; analysis of covariance; crossover designs; power analysis and sample size determination.

Course Information

Time and Place:  Lectures: TBD
Instructor:  TBD
Office:  TBD
E-mail:  TBD
Office Hours:  TBD
Grader:  TBD
Class Web Pages:  ecampus.tamu.edu
Text:  Douglas Montgomery, Design and Analysis of Experiments, 8th Ed , John Wiley & Sons
Prerequisite:  STAT 212; STAT 408.
Computing:  The SAS and R statistical programming software.
Homework:  Homework will be assigned and collected regularly. Selected homework problems will be graded, and solutions will be provided for all assigned problems. Homework is worth 15% of the total term score.
Exams:  There will be two midterm exams worth 25% each and a final exam worth 35%. Please see the exam policy below.
Exam Dates:  Midterm Exam: TBD
Final Exam:  TBD
Grading scale:  A: 90%–100%; B: 80%–89%; C: 70%–79%; D: 60%–69%; F: 0%–59%
Learning Outcomes

Upon successfully completing this course a student will be able to …

1. State the statistical model and assumptions for various designs
2. Use statistical software to analyze various designs
3. Apply statistical techniques to evaluate research questions
4. Describe the results of a statistical analysis using non-technical terms
5. Discuss the consequences of violations of assumptions, how to apply methods to detect violations of assumptions, and provide alternative analyses when assumptions are violated
6. Identify the design used in an experiment, provide the appropriate AOV table, and interpret the output in terms of the research questions
7. Compare advantages and disadvantages of competing designs in various experimental situations
8. Conduct a power analysis and sample size determination

Course Information

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Academic Integrity Statement:
“An Aggie does not lie, cheat or steal, or tolerate those who do.”
(http://aggiehonor.tamu.edu)
Course Policies

**Homework Policy:** Homework assignments will be available under **HomeworkAssignments** on eCampus.

Your homework solutions must be your own work, not from outside sources, consistent with the university rules on academic integrity. I expect you to follow this policy scrupulously. Your chances for a good performance on the exams will be higher if you follow this policy.

You may use:

- Your textbook and notes from class.
- Your notes, homework, etc., from a related class that you took or are taking.
- References listed on the syllabus.
- Discussion with the instructor or grader.
- Voluntary, mutual and cooperative discussion with other students currently taking the class. There will be an online discussion board.

You may not use:

- Solutions manuals (printed or electronic) and copies of pages from solutions manuals.
- Solutions notes, homework, etc., from previous classes.
- Solutions, notes, homework, etc., from students who took this class previously.
- Copying from students in this class, including expecting them to reveal their solutions in “discussion”.

Course Policies

Exam Policy: Your exam solutions must be your own work, consistent with the university rules on academic integrity.

Each exam will be comprehensive, cumulative and closed book. You will be allowed to use a self generated formula sheet. As a part of your solutions to problems, you will need to:

- Show all your work. This does not necessarily mean showing every individual algebraic or calculus step – but it must be clear what those steps are.
- Clearly identify the solution to all problems.

You may use a calculator but it cannot have capability to phone, text, or access Web.

Copies of old exams will be available for you to review under Review Materials for Exams on eCampus.

Attendance and Makeup Policy: Attendance is strongly recommended, but no grade for attendance will be given.

- If you must miss an exam due to a University-excused absence, see me as soon as possible to schedule a makeup exam. See Student Rules, http://studentrules.tamu.edu/rule07, for what constitutes an excused absence.
- A temporary grade of I (Incomplete) at the end of a semester indicates that the student has completed the course with the exception of a major quiz, final exam, or other work. The instructor shall give this grade only when the deficiency is due to an authorized absence or other cause beyond the control of the student.

Instructions for Installing R and Obtaining SAS

All students will need to download and install the latest R software. R is a statistical programming language we will use for simulation, computing probabilities and power calculations. It may be obtained at the CRAN website, as described below.

1. It is recommended that you first uninstall previous versions of R, if you have any.
2. Go to http://lib.stat.cmu.edu/R/CRAN and click your choice of platform (Linux, MacOS X or Windows) for the precompiled binary distribution. Note the FAQs link to the left for additional information.
3. Follow the instructions for installing the base system software (which is all you will need).

Examples using R, that you can mimic, will be given in the lecture notes.

Information on obtaining a copy of SAS will be provided on eCampus under General Information.
Course Outline

**Topic / Book Chapter**

1. **Introduction to Experimental Design / Ch. 1, Ch. 2 (Weeks 1 - 2)**
   - A. Planning for the experiment: What is the goal of experiment
   - B. Selection of Variables, Factors, EU’s, Cost, Number of Replications
   - C. Treatment structure: Single factor, crossed, nested, random, fixed
   - D. One way randomization (CRD)
   - E. Blocking and covariates:
     - a. Randomized Complete Block Designs (RCBD)
     - b. Balanced Incomplete Block Designs
     - c. Latin Square Designs (LSD)
     - d. Analysis of Covariance
   - F. Split Plot Design
   - G. Repeated Measures Design

2. **Completely randomized model with single factor, fixed effects / Ch. 3 (Weeks 3 - 4)**
   - A. How and what to randomize
   - B. Statistical models: Effects Model vs Cell Means Model
   - C. ANOVA and Sum of Squares
   - D. Power and sample size selection
   - E. Residuals analysis to evaluate model assumptions
   - F. Robustness of statistical tests and C.I.’s
   - G. Alternative analyses: Transformations, Kruskal-Wallis, Bonferroni Wilcoxon rank sum
   - H. Research questions specify the type of comparisons
   - I. General contrasts: Bonferroni and Scheffe
   - J. Multiple Comparisons: All pairs, vs control, finding Best treatment
   - K. Which error rate is being controlled
   - L. Response curves for quantitative treatment factors

3. **Factorial Treatment Designs / Ch. 5 (Weeks 5 - 6)**
   - A. Fixed factor levels, equal reps
   - B. Fixed factor levels, unequal reps
   - C. Fixed factor levels, missing trts
   - D. Decomposition of SS’s using contrasts
   - D. Fitting response curves and surfaces

   Exam II - TBD (Week 6)

4. **Fractional Factorial Treatments / Ch. 6, Ch. 8 (Weeks 7 - 8)**
   - A. Confounding and Alias Groups
   - B. Design resolution
   - C. $2^{n-p}$ Designs
   - D. Screening designs: Plackett-Burman designs
   - E. Analysis of experiments with no reps
   - E. Addition of center points in $2^k$ designs
5. Variance Components / Ch. 13 (Weeks 9 - 10)
   A. Random factor levels
   B. Methods for finding point estimators
   C. C.I.’s for variance components
   D. Subsampling
   E. Mixed models
   F. Nested factors
   G. Comparing methods of obtaining variance components
   H. Expected MS rules

6. Blocking Designs - HO 11 / Ch. 4 (Weeks 11 - 12)
   A. Blocking to increase precision
   B. Rank-based test: Friedman
   C. Latin Squares
   D. Incomplete Block Designs

   Exam II - TBD (Week 12)

7. Split Plot, Analysis of Covariance & Repeated Measures Experiments / Ch. 14, Ch. 15 (Weeks 13 - 14)
   A. Split Plot Design - Different size EU's
   E. Analysis of Covariance
   C. Repeated measures design

   Final Exam (Comprehensive) - TBD (Week 15)
Texas A&M University  
Departmental Request for a New Course  
Undergraduate • Graduate • Professional  
• Submit original form and attach a course syllabus.

Form Instructions
1. Course request type:  
   ✔ Undergraduate  ☐ Graduate  ☐ First Professional (DDS, MD, JD, PharmD, DVM)
2. Request submitted by (Department or Program Name):  
   Department of Statistics
3. Course prefix, number and complete title of course:  
4. Catalog course description (not to exceed 50 words):  
   Autocorrelation and spectral characteristics of univariate, autoregressive, and moving average models; identification, estimation and forecasting.

5. Prerequisite(s):  
   STAT 408, STAT 415 or approval of instructor.

6. Is this a variable credit course?  
   ☐ Yes  ✔ No  
   If yes, from ___ to ___
7. Is this a repeatable course?  
   ☐ Yes  ✔ No  
   If yes, this course may be taken ___ times.
8. Will this course be repeated within the same semester?  
   ☐ Yes  ✔ No
9. Will this course be submitted to the Core Curriculum Council?  
   ☐ Yes  ✔ No
10. How will this course be graded?  
    ✔ Grade  ☐ S/U  
    ☐ P/F (CLMD)

11. This course will be:  
    a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
    b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
      B. S. in Statistics

12. ☑ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

13. Prefix  Course #  Title (excluding punctuation)  
    STAT  426  METHODS TIME SERIES ANALYSIS
    
    | Lect. | Lab | Other | SCI | CIP and Fund Code | Admin. Unit | Acad. Year | EICE Code |
    |-------|-----|-------|-----|------------------|-------------|------------|-----------|
    | 3.00  | 0.00| 0.00  | 3.00| 2705010001       | 2740        | 16         | 17        |
    | 0     | 0   | 0     | 0   | 0                | 3           | 3          | 6         | 3         |
    | 2     | 0   | 0     | 0   | 0                | 2           | 0          | 3         | 6         | 3         | 2         |

    Approval recommended by:
    Valen Johnson  
    Department or Program Chair (Type Name & Sign)  Date: 3/15/15  
    Chair, College Review Committee  Date: 3/9/15

    Department Head or Program Chair (Type Name & Sign) (if cross-listed course)  Date: 3-9-15
    Dean of College

    Submitted to Coordinating Board by:
    Associate Director, Curricular Services  
    Chair, GC or UCG  Date: 3/15/15  
    Effective Date  MAP 1/2/2015

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 07/14
Instructor: Professor Jeff Hart
Office: 459E Blocker Building
Office hours: TBA
E-mail: hart@stat.tamu.edu

Course Description:
Introduction to statistical time series analysis; autocorrelation and spectral characteristics of univariate, autoregressive, moving average models; identification, estimation and forecasting.

Prerequisites:
- STAT 408 and STAT 415 or approval of instructor.

Learning Outcomes:
At the end of the semester, students will be able to:
1. identify when time-dependent data are serially correlated
2. fit various time series models to data using the software JMP
3. identify an appropriate model for a time series
4. produce forecasts of future values of a time series
5. conduct rudimentary spectral analyses

Course Website:
- All course materials will be posted on eCampus.

Required Materials:
- Textbook: H.J. Newton, Timeslab: A Time Series Analysis Laboratory. This book is out of print, but a bound Xerox copy can be purchased at Copy Corner in College Station for $34.42.
- A set of course notes is available in the form of pdf files at the 426 website in eCampus.
- Statistical software: JMP, a version of which will be made available to the student free of charge.

Grades:
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<td>C 70-79%</td>
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<tr>
<td>30%</td>
<td>Final Exam</td>
<td>D 60-69%</td>
</tr>
</tbody>
</table>

Attendance:
- Attendance is strongly recommended, but no grade on attendance will be given.

Homework:
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Exams:
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Schedule:

Week 1:

Introduction

Weeks 2 – 4:

- Correlograms
- Periodograms
- Data Transformations
- Simple Forecasting Methods

Weeks 5 – 6:

- Difference Equations
- Covariance Stationary Time Series
- Linear Filters

Exam One: Monday of 6th Week

Weeks 7 – 9:

- Theory of Prediction
- ARMA Processes
- Statistical Properties of Descriptive Statistics

Week 10 – 11:

- Tests for White Noise
- Nonparametric Spectral Density Estimation
- Finding Models and Estimating their Parameters

Exam Two: Monday of 11th Week

Weeks 12 – 14:

- Regression with Autocorrelated Errors
- Searching for Periodicities
- Bivariate Time Series
- Coherence, Phase, and Gain

Week 15:

Final Exam
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Texas A&M University

Departmental Request for a New Course
Undergraduate * Graduate * Professional
- Submit original form and attach a course syllabus.

Form Instructions
1. Course request type:  
   - Undergraduate  
   - Graduate  
   - First Professional (DDS, MD, JD, PharmD, DVM)
2. Request submitted by (Department or Program Name):  
   Department of Statistics
3. Course prefix, number and complete title of course:  
4. Catalog course description (not to exceed 50 words):
   Matrix algebra; random vectors; multivariate distributions; copulas; multivariate generalizations of classical testing; principle component analysis; discriminant analysis; clustering; multidimensional scaling; factor analysis; canonical analysis.
5. Prerequisite(s):
   MATH 304 or MATH 323; STAT 212; STAT 415 or equivalent
   Cross-listed with: 
   Stacked with:
   Cross-listed courses require the signature of both department heads.
6. Is this a variable credit course?  
   - Yes  
   - No  
   If yes, from ________ to ________
7. Is this a repeatable course?  
   - Yes  
   - No  
   If yes, this course may be taken ________ times.
   Will this course be repeated within the same semester?  
   - Yes  
   - No
8. Will this course be submitted to the Core Curriculum Council?  
   - Yes  
   - No
9. How will this course be graded:  
   - Grade  
   - S/U  
   - P/F (CLMD)
10. This course will be:
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11. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with those departments. Attach approval letters.
12. I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-basics-for-distance-education).
13. Prefix | Course # | Title (excluding punctuation)  
   STAT | 436 | MULTIVAR ANALY AND STAT LEARN
   
   Lect. | Lab | Other | SCI | CIP and Fund Code | Admin. Unit | Acad. Year | FICE Code | Level  
   3.00 | 0.00 | 0.00 | 3.00 | 27050100001 | 2740 | 16 | 17 | 0 | 0 | 3 | 6 | 3 | 2 | 4
   Approval recommended by:
   Valen Johnson
   Department Head or Program Chair (Type Name & Sign)  
   Date  
   Chair, College Review Committee  
   Date  
   Department Head or Program Chair (Type Name & Sign)  
   (if cross-listed course)  
   Date  
   Dean of College  
   Date  
   Submitted to Coordinating Board by:
   Chair, GC or UCC  
   Date  
   Effective Date  
   CURRICULAR SERVICES
Instructor: Professor Huiyan Sang
Office: 464B Blocker Building
Office hours: TBA
E-mail: huiyan@stat.tamu.edu

Course Description
This course introduces foundations of multivariate analysis including matrix algebra, random vectors, multivariate distributions, copulas, and multivariate generalizations of classical testing. It also introduces methods of multivariate analysis and machine learning including principle component analysis, discriminant analysis, clustering, multidimensional scaling and elements of factor and canonical analysis.

Prerequisites:
- MATH 304 or 323, STAT 212, STAT 415 or equivalent

Learning Outcomes:
At the end of the semester, students will be able to:
1. apply multivariate methods to real data sets
2. use standard software to perform multivariate analysis of real data sets

Course Website:
- All STAT 436 material will be posted on eCampus.

Required Materials:
- Statistical software: we will use R (http://www.r-project.org) to do statistical analysis.
- The course notes will be posted on eCampus. These notes should be printed out and brought to class.

Grades:

<table>
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<tr>
<th>Percentage</th>
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<tr>
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</tbody>
</table>

Attendance:
- Attendance is strongly recommended, but no grade on attendance will be given.

Homework:
- Homework will be assigned every two weeks. Homework is to be submitted online at WebAssign.
- Instructions on how to register with WebAssign will be given in class and on eCampus. The URL for WebAssign is:
  
  https://www.webassign.net/student.html

- Homework will not be accepted after the due date unless you have a university excused absence (http://student-rules.tamu.edu/rule07).

Exams:
- There will be one midterm exam and a final exam.
- If you miss an exam due to a university excused absence, you must take the exam early if possible. Otherwise, you will need to take the exam as soon as you can after your return from the absence.

**Schedule:**

**Week 1:**
- Aspects of Multivariate Analysis
- Matrix Algebra and Random Vectors

**Weeks 2 – 4:**
- Sample Geometry and Random Sampling
- Characterization and Properties of Multivariate Normal Distribution
- The Wishart Distribution
- The Hotelling $T^2$ Distribution

**Weeks 5 – 6:**
- Other Distributions Related to the Multivariate Normal Distribution
- Copulas
- Least Squares

Exam One: Monday of 6th Week

**Weeks 7 – 9:**
- Maximum Likelihood
- Likelihood Ratio Test
- MANOVA, MANCOVA

**Week 10 – 11:**
- Principal Components Analysis
- Factor Analysis and Inference for Structured Covariance Matrices
- Canonical Correlation Analysis

Exam Two: Monday of 11th Week

**Weeks 12 – 14:**
- Discrimination and Classification
- Clustering
- Multidimensional Scaling, Distance Methods and Ordination

**Week 15:**
- Final Exam

**STATEMENT ON DISABILITIES:**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

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**ACADEMIC INTEGRITY STATEMENT:** “An Aggie does not lie, cheat, or steal or tolerate those who do”. (http://aggiehonor.tamu.edu)
A16
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

Form Instructions
1. Course request type: ☑ Undergraduate ☐ Graduate ☐ First Professional (DDS, MD, JD, PharmD, DVM)
2. Request submitted by (Department or Program Name): Department of Statistics
3. Course prefix, number and complete title of course: STAT 438, Bayesian Statistics.

4. Catalog course description (not to exceed 50 words):
Analysis of scalar and vector-valued parameters; Bayesian linear models; Monte Carlo computational methods; prior elicitation; hypothesis testing and model selection; hierarchical models; selected advanced models; use of statistical packages such as WinBUGS, R or MATLAB.

5. Prerequisite(s): MATH 221; STAT 408 or equivalent

6. Is this a variable credit course? ☑ No

7. Is this a repeatable course? ☑ No

Will this course be repeated within the same semester? ☑ No

8. Will this course be submitted to the Core Curriculum Council? ☑ No

9. How will this course be graded: ☑ Grade ☐ S/U ☐ P/F (CLMD)

10. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
      B.S. in Statistics
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

☑ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-control-basics-for-distance-education).

13. Prefix Course # Title (excluding punctuation)

<table>
<thead>
<tr>
<th>STAT 438</th>
<th>Bayesian Statistics</th>
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<tbody>
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<td>Lect.</td>
<td>Lab</td>
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</table>

Approval recommended by:

Valen Johnson
Department Head or Program Chair

Date 3/9/15
Chair, College Review Committee
Date 3-9-15
Dean of College

Submitted to Coordinating Board by:

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 07/14
STAT 438 – Bayesian Statistics
Fall 2016, Texas A&M University

Instructor: Professor Valen E. Johnson
Office: 430 Blocker Building
Office hours: TBD
Phone: (979) 862-7583
E-mail: vjohnson@stat.tamu.edu

Course Description
Topics covered include Principles of Bayesian statistics; one- and two-sample Bayesian models; Bayesian linear and generalized linear models; Monte Carlo approaches to model fitting; Prior elicitation; Hypothesis testing and model selection; Complex error structures, hierarchical models; Use of Statistical packages including BUGS/WinBUGS, R, or MATLAB.

Prerequisites:
- MATH 221 and STAT 408 or equivalent

Learning Outcomes:
STAT 438 is a methodological statistics course covering principles and applications of Bayesian analysis. At the end of the semester, students will be able to:
(1) formulate Bayesian models for numerous common data analysis situations, including prior elicitation
(2) use software programs like R, WinBUGS, or MATLAB to perform Bayesian analyses
(3) apply Bayesian hierarchical models to fit real datasets

Course Website:
- All STAT 438 material will be posted on eCampus.

Required Materials:
- Statistical software, R or equivalent. Instructions for obtaining R will be posted on eCampus. R is freeware that can be used to perform all analyses required in the course; students may also use MATLAB, WinBUG, or other software to perform selected analyses.
- Homework assignments and supplemental reading assignments will be posted on eCampus.

Grades:

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<th>Percentage</th>
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<tr>
<td>10%</td>
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<td>25%</td>
<td>Exam I</td>
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<tr>
<td>25%</td>
<td>Exam II</td>
<td>C</td>
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<tr>
<td>30%</td>
<td>Final Exam</td>
<td>D</td>
</tr>
<tr>
<td>10%</td>
<td>Unannounced quizzes</td>
<td>F</td>
</tr>
</tbody>
</table>

Attendance:
- Attendance is strongly recommended, but no grade on attendance will be given.

Homework:
- Homework will be due most Tuesdays and will be collected in class.
• Homework will not be accepted after the due date unless you have a university excused absence (http://student-rules.tamu.edu/rule07).
• If you miss an unannounced quiz due to a university-excused absence, you will be given an opportunity to make up the quiz after your return.

Exams:
• There will be 2 midterm exams and a final exam. There will also be one or more unannounced quizzes.
• If you miss an exam due to a university excused absence, you must take the exam early if possible. Otherwise, you will need to take the exam as soon as you can after your return from the absence. To make up an unannounced quiz, you must notify the instructor before class of your absence or provide a university excused absence.

Schedule:

Week 1:

Review of Probability Concepts

Weeks 2 – 4:

Bayes' Law and the Basic Bayesian Framework
Bayesian Analyses for Basic One-Sample Models

Weeks 5 – 6:

Bayesian Linear Models

Exam One: Monday of 6th Week

Weeks 7 – 9:

General Classes of Prior Distributions and Prior Elicitation
Some Useful Monte Carlo Methods (applications in R)

Week 10 – 11:

Assessing Model Quality
Bayesian Hypothesis Testing

Exam Two: Monday of 11th Week

Weeks 12 – 14:

Bayesian Analyses for Two- and k-Sample Models
Hierarchical Bayesian Models
Advanced Bayesian Models: Count Regression, Mixed Models, Models for Clustered/Longitudinal Data

Week 15:

Final Exam
STATEMENT ON DISABILITIES:
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(http://aggiehonor.tamu.edu)
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

Form Instructions

1. Course request type: ☐ Undergraduate ☐ Graduate ☐ First Professional (DDS, MD, JD, PharmD, DVM)
2. Request submitted by (Department or Program Name): Department of Statistics
4. Catalog course description (not to exceed 50 words):
   Applications of regression methods in biostatistics; correlated data analysis; survival analysis; missing data techniques; use of the R programming language.

5. Prerequisite(s): STAT 212; STAT 408 or approval of instructor
   Cross-listed with: Stacked with:
   Cross-listed courses require the signature of both department heads.

6. Is this a variable credit course? ☐ Yes ☐ No
   If yes, from ________ to ________
7. Is this a repeatable course? ☐ Yes ☐ No
   If yes, this course may be taken ________ times.
   Will this course be repeated within the same semester? ☐ Yes ☐ No
8. Will this course be submitted to the Core Curriculum Council? ☐ Yes ☐ No
9. How will this course be graded? ☐ Grade ☐ S/U ☐ P/F (CLMD)
10. This course will be:
    a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
    b. an elective for students enrolled in the following degree program(s) (e.g., M.S. in geography)
    B.S. in Statistics

11. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.
12. ☑ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

13. Prefix | Course # | Title (excluding punctuation)
        | STAT 445 | Applied Biostat Data Analysis
Lect. | Lab | Other | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | FICE Code | Level |
----- | ---- | ------ | ---- | ----------------- | ----------- | ---------- | --------- | ----- |
3.00  | 0.00 | 0.00   | 3.00 | 2705010001        | 2740        | 16         | 17        | 00    |

Approval recommended by:
Vaian Johnson
Department Head or Program Chair (Type Name & Sign) Date

Department Head or Program Chair (Type Name & Sign) Date

Submitted to Coordinating Board by:
Chair, GC or UCC Date

Questions regarding this form should be directed to Sandra Williams at 845.8201 or s рамках williams@tamu.edu.
Curricular Services – 07/14

CURRICULAR SERVICES

RECEIVED
MAR 12 2015

Level 4
STAT 445 – Applied Biostatistics and Data Analysis  
Fall 2016, Texas A&M University

Instructor: Dr. Alan Dabney  
Office: 404D Blocker Building  
Office hours: TBD.  
Phone: (979) 845-3141  
E-mail: adabney@stat.tamu.edu

Course Description
Applications of regression methods in biostatistics, including correlated data analysis, survival analysis, and missing data techniques; use of the R programming language.

Prerequisites:
- STAT 212, STAT 408 or approval of instructor

Learning Outcomes:
STAT 445 is an applied statistics course covering the application of regression methods in biostatistics. At the end of the semester, students will be able to use R to:
1. explore biostatistics data using pictures and summary statistics
2. apply ordinary least squares regression models in the context of biostatistical data
3. identify and apply the appropriate exploratory and inferential methods to correlated data
4. identify and apply the appropriate exploratory and inferential methods to survival data
5. carry out multiple imputation in the case of missing data
6. use diagnostic methods to assess the appropriateness of all models

Course Website:
- All STAT 445 material will be posted on eCampus.

Required Materials:
- Statistical software, R. We will spend some time getting familiar with R at the beginning of the course.
- The course notes will be posted periodically on eCampus. These notes should be printed out and brought to class.

Grades:

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<tr>
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<tr>
<td>25%</td>
<td>Exam I</td>
<td>B</td>
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<tr>
<td>25%</td>
<td>Exam II</td>
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50% Homework A 90-100%
25% Exam I B 80-89%
25% Exam II C 70-79%

Attendance:
- Attendance is strongly recommended, but no grade on attendance will be given.

Homework:
- Homework will be due most Mondays. Homework is to be submitted online at WebAssign.
• Instructions on how to register with WebAssign will be given in class and on eCampus. The URL for WebAssign is:
  https://www.webassign.net/student.html

• Homework will not be accepted after the due date unless you have a university excused absence (http://student-rules.tamu.edu/rule07).

Exams:
• There will be 2 midterm exams.
• If you miss an exam due to a university excused absence, you must take the exam early if possible. Otherwise, you will need to take the exam as soon as you can after your return from the absence.

Schedule:

Week 1:

Introduction to R for Biostatistics
Example Biostatistics Data Sets

Weeks 2 – 4:

Likelihood Ratio and F Tests
Confounding and Mediation
Checking Model Assumptions and Fit
Use of Simulation to Explore Operating Characteristics of a Statistical Method
Simulation-Based Sample Size Calculations

Weeks 5 – 6:

Bootstrap to Approximate a Sampling Distribution
Bootstrap Confidence Intervals
Bootstrap Hypothesis Tests
Bootstrap for Regression

Exam One: Monday of 6th Week

Weeks 7 – 9:

Hierarchical Data
Longitudinal Data
Generalized Estimating Equations
Random Effects Models
Marginal Versus Conditional Models

Week 10 – 11:

Classifications of Missing Data
Simple Approaches to Handling Missing Data
Multiple Imputation
Deciding Which Missing Data Mechanism May Be Applicable
Analysis Methods Specific to Missing Data Mechanisms

Exam Two: Monday of 11th Week
Weeks 12 – 14:

Cox Proportional Hazards Model
Extensions to the Cox Model
Checking Model Assumptions and Fit
Competing Risks Data

Week 15:

No Final Exam

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Texas A&M University

Departmental Request for a New Course

Undergraduate • Graduate • Professional

Submit original form and attach a course syllabus.

Form Instructions

1. Course request type: ☑ Undergraduate  ☐ Graduate  ☐ First Professional (D.D.S., M.D., J.D., Pharm.D., D.V.M.)

2. Request submitted by (Department or Program Name): Department of Statistics

3. Course prefix, number and complete title of course: STAT 446. Statistical Bioinformatics.

4. Catalog course description (not to exceed 50 words):
Analysis of high-dimensional genomic and proteomic data using R; sequence analysis; genome-wide association studies; proteomics; array-based technologies; classification techniques.

5. Prerequisite(s): STAT 212; STAT 408 or approval of instructor

Cross-listed with:  

Stacked with:  

Cross-listed courses require the signature of both department heads.

6. Is this a variable credit course? ☐ Yes  ☑ No  If yes, from ________ to ________

7. Is this a repeatable course? ☐ Yes  ☑ No  If yes, this course may be taken ________ times.

Will this course be repeated within the same semester? ☐ Yes  ☑ No

8. Will this course be submitted to the Core Curriculum Council? ☐ Yes  ☑ No

9. How will this course be graded? ☑ Grade  ☐ S/U  ☐ P/F (CLMD)

10. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history);

   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

B.S. in Statistics

11. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

12. ☑ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

13. Prefix Course # Title (excluding punctuation)

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Approval recommended by:

Valen Johnson
Department Head or Program Chair (Type Name & Sign) Date

Chair, College Review Committee Date

Dean of College Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.

Curricular Services – 07/14
Instructor: Dr. Alan Dabney
Office: 404D Blocker Building
Office hours: TBD.
Phone: (979) 845-3141
E-mail: adabney@stat.tamu.edu

Course Description
This course covers the analysis of “–omic” data using R. Specific topics include sequence analysis, GWAS, proteomics, array-based technologies, and classification techniques.

Prerequisites:
- STAT 212, STAT 408 or approval of instructor.

Learning Objectives:
STAT 446 is an applied statistics course covering the analysis of “–omics” data with R. At the end of the semester, students will be able to use R to:
1. work with R packages from Bioconductor
2. analyze genomic sequence data
3. analyze protein structure data
4. analyze expression microarray data
5. analyze genome-wide association study data
6. analyze mass spectrometry data
7. analyze next-generation sequencing data
8. perform classification analysis on –omics data

Course Website:
- All STAT 446 material will be posted on eCampus.

Required Materials:
- Textbook, Bioinformatics with R Cookbook by Sinha. This is available online on the TAMU library website.
- Statistical software, R. We will spend some time getting familiar with R at the beginning of the course.

Grades:

<table>
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<tr>
<th>Percentage</th>
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<tbody>
<tr>
<td>50%</td>
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</tbody>
</table>
| 25%        | Exam I            | 90-100%
| 25%        | Exam II           | B     |
| 80-89%     |                   | C     |
| 70-79%     |                   | D     |
| 60-69%     |                   | F     |
| 0-59%      |                   |       |

Attendance:
- Attendance is strongly recommended, but no grade for attendance will be given.

Homework:
- Homework will be due most Mondays. Homework is to be submitted online at WebAssign.
- Instructions on how to register with WebAssign will be given in class and on eCampus. The URL for WebAssign is:
https://www.webassign.net/student.html

- Homework will not be accepted after the due date unless you have a university excused absence (http://student-rules.tamu.edu/rule07).

**Exams:**
- There will be 2 midterm exams.
- If you miss an exam due to a university excused absence, you must take the exam early if possible. Otherwise, you will need to take the exam as soon as you can after your return from the absence.

**Schedule:**

**Week 1:**

- Introduction to R and Bioconductor
- Working with KEGG and GO Annotation

**Weeks 2 – 4:**

- Retrieving and Writing Sequence Information
- Sequence Alignment
- Phylogenetic Analysis
- BLAST Results

- Retrieving and Analyzing Protein Sequence Data
- Domain Annotation
- Protein Visualization Techniques
- Searching for Similar Proteins

**Weeks 5 – 6:**

- Reading and Manipulating Microarray Data
- Exploratory Analysis of Microarray Data
- Normalization of Microarray Data
- Differential Expression Analysis

- Exam One: Monday of 6th Week

**Weeks 7 – 9:**

- SNP Association Analysis
- Data Handling and Manipulation
- Testing for Hardy-Weinberg Equilibrium
- Exploratory Analysis of SNP Data

- Reading and Manipulating Mass Spectrometry Data
- Preprocessing of Mass Spectrometry Data
- Peak Detection and Alignment
- Peptide Identification
- Protein Quantification

**Week 10 – 11:**
Reading and Manipulating NGS Data
Preprocessing NGS Data
Differential Analysis of NGS Data
Relation with GO and KEGG Terms
Visualizing NGS Data

Exam Two: Monday of 11th Week

Weeks 12 – 14:

K-means and Hierarchical Clustering
Supervised Learning
Cross-Validation
Performance Measures and ROC Plots
Biomarker Identification

Week 15:

No Final Exam

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Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
Submit original form and attach a course syllabus.

Form Instructions
1. Course request type: ☑ Undergraduate ☐ Graduate ☐ First Professional (DDS, MD, JD, PharmD, DPA)
2. Request submitted by (Department or Program Name): Department of Statistics
3. Course prefix, number and complete title of course: STAT 459. Categorical Data Analysis.
4. Catalog course description (not to exceed 50 words):
Techniques for the analysis of categorical data; contingency table analysis; logistic regression; Poisson regression; loglinear models; analysis of ordinal data; use of computer software such as SAS or R.
5. Prerequisite(s):
   - STAT 212; STAT 408 or equivalent

6. Is this a variable credit course? ☐ Yes ☑ No
   If yes, from _____ to _____
7. Is this a repeatable course? ☐ Yes ☑ No
   If yes, this course may be taken _____ times.
8. Will this course be repeated within the same semester? ☐ Yes ☑ No
9. Will this course be submitted to the Core Curriculum Council? ☐ Yes ☑ No
10. How will this course be graded? ☑ Grade ☐ S/U ☐ P/F (CLMD)

11. This course will be:
   a. required for students enrolled in the following degree programs(s) (e.g., B.A. in history)
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
   B.S. in Statistics

12. I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

13. Prefix Course # Title (excluding punctuation)

<table>
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<tr>
<th>STAT</th>
<th>459</th>
<th>CATEGORICAL DATA ANALYSIS</th>
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Approval recommended by:

Valen Johnson
Department Head or Program Chair (Type Name & Sign) Date 3/10/15

Chair, College Review Committee Date 3/9/15

Dean of College Date 3-9-15

Submitted to Coordinating Board by:
Chair, GC or UCC Date

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 07/14


Instructor: Professor Thomas Wehrly
Office: 459C Blocker Building
Office hours: MWF 2:50—3:50 pm or by appointment.
Phone: (979) 845-1359
E-mail: twehrly@stat.tamu.edu

Course Description
Techniques for the analysis of categorical data include contingency table analysis, logistic regression, Poisson regression, loglinear models, and analysis of ordinal data; use of computer software such as SAS or R.

Prerequisites:
- STAT 212, STAT 408 or equivalent

Learning Objectives:
STAT 459 is an applied statistics course covering the analysis of categorical data. At the end of the semester, students will be able to (1) determine and use the most appropriate methods to summarize categorical data using descriptive statistics, (2) identify the appropriate model for analysis of a given categorical data set, (3) use the appropriate inferential statistics for a given categorical data set, be able to perform the appropriate calculations using statistical software, and interpret the results of the statistical analysis, (4) use diagnostic methods to assess the appropriateness of the chosen model. The student will have these skills and be able to analyze data using contingency table analysis, logistic regression, Poisson regression, loglinear models, and analysis of ordinal data.

Course Website:
- All STAT 459 material will be posted on eCampus.

Required Materials:
- Statistical software, SAS. Instructions for obtaining SAS will be posted on eCampus.
- The course notes will be posted periodically on eCampus. These notes should be printed out and brought to class.

Grades:

| Percentage | Component     | Grade
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Attendance:
- Attendance is strongly recommended, but no grade for attendance will be given.

Homework:
- Homework will be due most Wednesdays. Homework is to be submitted online at WebAssign.
- Instructions on how to register with WebAssign will be given in class and on eCampus. The URL for WebAssign is:
Homework will not be accepted after the due date unless you have a university excused absence (http://student-rules.tamu.edu/rule07).

**Exams:**
- There will be 2 midterm exams and a final exam.
- If you miss an exam due to a university excused absence, you must take the exam early if possible. Otherwise, you will need to take the exam as soon as you can after your return from the absence.

**Topics & Chapters from the Textbook (Anticipated Lecture Schedule):**

**Week 1:**
- Binomial, multinomial, and Poisson models for categorical data
- Likelihood based inference for these models
- Testing goodness of fit for multinomial data

**Weeks 2 – 3:**
- Models for overdispersed data
- Structure of a two-way table
- Comparing proportions using relative risk and odds ratio
- Types of studies
- Chi-squared tests for nominal and ordinal data
- Exact tests for small tables

**Weeks 4 – 5:**
- Three-way contingency tables, marginal and partial association
- Introduction to GLMs
- GLMs for binary data and for count data
- Model inference based on the likelihood

**Weeks 6 – 7:**
- Model checking and model selection
- Interpreting logistic regression
- Inference for logistic regression

*Test 1: Friday of Week 7*

**Week 8 – 9:**
- Strategies in model selection
- Classification tables and ROC curves
- Model checking and model diagnostics

**Week 10:**
- Logit models for nominal responses
- Cumulative logit models for ordinal responses
Test 2: Friday of Week 10

Weeks 11 – 12:

Loglinear models for contingency tables
Inference for loglinear models
Loglinear-logistic connection
Association graphs and collapsibility
Model ordinal associations

Weeks 13 – 14:

Comparing depending proportions
Logistic regression for matched pairs
Loglinear models and analysis of square tables

Week 15:

Final Exam

STATEMENT ON DISABILITIES:
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

STATEMENT ON PLAGIARISM: The handouts used in this course are copyrighted. By “handouts”, I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission. As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, consult the latest issue of the Texas A&M University Students Rules, under the section “Scholastic Dishonesty”.

ACADEMIC INTEGRITY STATEMENT: “An Aggie does not lie, cheat, or steal or tolerate those who do”. (http://aggiehonor.tamu.edu)
Texas A&M University
Departmental Request for a New Course
Undergraduate ♦ Graduate ♦ Professional
Submit original form and attach a course syllabus.

Form Instructions
1. Course request type:
   - Undergraduate [☑]  Graduate [ ]  First Professional (MD, JD, PharmD, DPA)
2. Request submitted by (Department or Program Name):
   Department of Statistics
3. Course prefix, number and complete title of course:
   STAT 482. Statistics Capstone.
4. Catalog course description (not to exceed 50 words):
   Integration of statistical models, design, sampling, graphics, and computing for the analysis of real problems; planning, drafting, revising, and editing reports; ethics; principles of collaboration and communication.

5. Prerequisite(s):
   STAT 404; STAT 406; STAT 408 and senior classification.
   Cross-listed with:
   Stacked with:
   Cross-listed courses require the signature of both department heads.

6. Is this a variable credit course? [□] Yes [☑] No
   If yes, from _____ to _____
7. Is this a repeatable course? [□] Yes [☑] No
   If yes, this course may be taken _____ times.
   Will this course be repeated within the same semester? [□] Yes [☑] No
8. Will this course be submitted to the Core Curriculum Council? [□] Yes [☑] No
9. How will this course be graded? [☑] Grade [□] S/U [□] P/F (CLMD)
10. This course will be:
    a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
       B. S. in Statistics
    b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

11. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.
12. [☑] I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-controls/export-control-basics-for-distance-education).

13. Prefix  Course #  Title (excluding punctuation)
    STAT  482  Statistics Capstone

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Valen Johnson
Department Head or Program Chair (Type Name & Sign)
Date

Chab College Review Committee
Date

Dean of College
Date

Submitted to Coordinating Board by:
Chair, GC or UCC
Date

Associate Director, Curricular Services
Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu
Curricular Services – 07/14
STAT 482 – Statistics Capstone
Spring 2017, Texas A&M University

Instructor: TBD
Office: TBD
Office hours: TBD
Phone: TBD
E-mail: TBD

Course Description
Integration of statistical models, design, sampling, graphics, and computing for the analysis of real problems; planning, drafting, revising, and editing reports; ethics; principles of collaboration and communication.

This is a writing-intensive (W) course. As such, a substantial portion of the students' grades will be based on their demonstrated ability to communicate effectively through writing. The class cannot be passed without passing the written requirements.

Prerequisites:
- STAT 404, STAT 406, STAT 408 and senior classification

Learning Outcomes:
At the end of the semester, students will be able to:
1. follow ethical guidelines and procedures for statistical consulting
2. communicate statistical information effectively orally, through writing, and using tables and figures
3. apply statistical models to real problems
4. calculate and interpret appropriate summary and inferential statistics, and create and interpret appropriate graphs and figures for data and models

Course Website:
- All STAT 482 material will be posted on eCampus.

Required Materials:
- Textbook, Statistical Consulting by Javier Cabrera and Andrew McDougall.
- Required software: R or SAS.

Grades:

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<th>Percentage</th>
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<td>Journal Entries</td>
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<td>50%</td>
<td>Short Writing Assignments</td>
<td>B</td>
</tr>
<tr>
<td>30%</td>
<td>Final Project</td>
<td>C</td>
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</table>

If you are unable to submit an assignment on its due date because of a university-excused absence, you must submit the assignment early. Otherwise, you will need to submit the assignment as soon as you can after your return from the absence. See http://student-rules.tamu.edu/rule07 for details on what constitutes a university-excused absence.

Attendance:
- Attendance is strongly recommended, but no grade for attendance will be given.
Journal Entries: There will be at least five required journal entries. Each journal entry should be at least 100 words long and will be graded according to the following scale:

- [0] Not acceptable.
- [1] Minimal work: Incomplete development of ideas, lack of clearly defined structure, several grammatical or spelling errors.
- [2] Acceptable work: Good reliance on examples to illustrate ideas, appropriate conclusion, few or no grammatical or spelling errors.
- [3] Excellent: Excellent use of examples to develop ideas, thorough, very logically organized, flawless spelling and grammar, varied sentence structure.

Short Writing Assignments: Two short writing assignments will be assigned. Each should be at least 750 words and will be graded using the following weights:

- 20% answering the research question and strength of the argument
- 20% correct choices of statistical modeling
- 20% correct interpretation of the data, graphs, and results
- 20% clarity and conciseness in writing
- 20% grammar, spelling, overall professionalism, and legibility of graphics

An example of a final report is found in Section 4.7 of the textbook.

Final Project: The final project will be conducted in groups of no more than five students and involve the full analysis of a data set. Projects should be at least 1000 words and will be graded using the following weights:

- 20% answering the research question and strength of the argument
- 20% correct choices of statistical modeling
- 20% correct interpretation of the data, graphs, and results
- 20% clarity and conciseness in writing
- 10% grammar, spelling, overall professionalism, and legibility of graphics
- 10% peer review score

An example of a final report is found in Section 4.7 of the textbook.

Schedule:

Week 1: One lecture on best-practices in writing statistical reports, both as individuals and as part of a collaborative team. Read "Avoiding Statistical Pitfalls" by Chatfield, 1991 (found on eCampus). Write one journal entry summarizing the most important pitfalls encountered in statistical analysis, according to this author.

Week 2: Read Chapter 1 and Sections 2.1, 2.2, and 4.3 in the textbook. Practice statistician-client interactions in class. Write one journal entry summarizing what you did well and what you need to improve on during your next client interaction.

Week 3: Read the Ethical Guidelines for Statistical Practice by the ASA. Write one journal entry summarizing the most important responsibilities of a statistician.

Week 4: Read the remainders of Chapters 2 and 4 in the textbook. Work on the statistical analysis for the first writing assignment.

Week 5: Read the writing guidelines from the TAMU Writing Center. Form teams for final project. Schedule first meeting with client. Finish writing the first writing assignment and turn in draft.

Week 6: Read article on communication and listening skills. Resampling methodology lecture. Comments on
first writing assignment draft returned.

Week 7: Special topics methodology lecture. Final drafts of the first writing assignment due. Write one journal entry describing the analysis of a data set using resampling.

Week 8: Class discussion on first meetings with clients. Brainstorm on methodologies. Write one journal entry summarizing what went well and what to improve upon in the next client meeting. Work on the statistical analysis for the second writing assignment.

Week 9: Continue meetings with clients. Begin cleaning data if necessary. Finish the second writing assignment and turn in draft.

Week 10: Create graphs and summary statistics for final projects. (Remember Section 2.6!) Write a one-paragraph summary to turn in. Discuss next steps in statistical analysis. Comments on second writing assignment draft returned.

Week 11: Final draft of second writing assignment due. Meet with clients to share preliminary analyses and adjust plans for further statistical analysis.

Week 12: Special topics lecture. Class discussion on meetings with clients. First draft of final project due.

Week 13: Special topics lecture. Last journal entry on uses of special topics. Comments on final project draft returned.

Week 14: Final draft of final project due.

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