1. Approval of the minutes of December 12, 2014.

2. New Courses

   A9  MGMT 261  
   A10 MGMT 477  
   A11 STAT 182  
   A12 STAT 404  
   A13 STAT 406  
   A14 STAT 426  
   A15 STAT 436  
   A16 STAT 438  
   A17 STAT 445  
   A18 STAT 446  
   A19 STAT 459  
   A20 STAT 482

3. Withdrawal of Courses

   B1  EDTC 311  
   B2  EPSY 428  
   B3  SEFB 426

4. Change in Courses

   C6  GEOG 201 – lab contact hours  
   C7  SPED 314 – lecture contact hours, SCH

5. Change in Curriculum

   **College of Education and Human Development**
   D1  Department of Educational Psychology
   BS in Interdisciplinary Studies
   Special Education EC-12

6. Special Consideration

   **School of Law**
   Any bachelor’s degree and JD in Law
   H3  Request for a 3+3 program

   **College of Science**
   H4  Department of Statistics
   BS in Statistics
   Request for a new degree program

7. Information Only

   **College of Agriculture and Life Sciences**
   Department of Biological and Agricultural Engineering
   Department of Nutrition and Food Science
   I1  Request to include zero credit hours to existing variable credit courses

8. Other Business
Members present: Tim Scott (Chair), College of Science; James Herman (Vice Chair), College of Veterinary Medicine and Biomedical Sciences; Bob Knight, College of Agriculture and Life Sciences; Leslie Feigenbaum, College of Architecture; Jon Jasperson, Mays Business School; Prasad Enjeti, Dwight Look College of Engineering; Shari Yvon-Lewis (for Chris Houser), College of Geosciences; Leonard Bright, Bush School of Government and Public Service; Trez Jones (for Christine Bergeron), College of Education and Human Development; Patricia Campbell, Texas A&M Baylor College of Dentistry; Steve Oberhelman, College of Liberal Arts; Brian Holland (for Cathy Hansen), School of Nursing; Bernard Appiah (for Rick Danko), School of Public Health; Glenn Jones, Texas A&M University at Galveston; Stephanie Graves, Texas A&M University Libraries; Jim Kracht (for Ann Kenimer), Undergraduate Studies; Jean Layne, Center for Teaching Excellence; John Louis Bolch, Office of the Registrar.

Guests: Donna Adcock, Department of Agricultural Economics; Donna Witt, Department of Animal Sciences; David Peterson, Department of Biochemistry and Biophysics; Diane Lovell Osburn, Blinn College; Aydin Karsilayan, Department of Electrical and Computer Engineering; Whitney Korthauer, Department of Engineering Technology and Industrial Distribution; Michael Arnold, Department of Horticultural Sciences; Andy Armstrong, College of Liberal Arts; Poppy Capehart, Department of Nutrition and Food Sciences; Donnalee Dox and Jeff Morris, Department of Performance Studies; Jennifer Allen and Allison Moore, Department of Poultry Science; Angela Banner, Barbara Hosler and Shelby Schiller, Office of the Registrar

The Undergraduate Curriculum Committee recommends approval of the following:

1. The minutes of the November 14, 2014 meeting.

2. New Courses

   ARTS 210. Introduction to Photography. (2-3). Credit 3. Introduction to the digital camera, creation, manipulation and critique of the digital image; composition and aesthetics; exposure control; digital workflow; post-processing techniques; layering and compositing; history of the photographic image. Prerequisite: Non-visualization majors only.

   BAEN 201. Analysis of Biological and Agricultural Engineering Problems. (2-3). Credit 3. Overview of Biological and Agricultural Engineering discipline through case studies and contemporary problems; introduction to computer programming; engineering analysis and problem solving using computer programming. Prerequisites: ENGR 111; MATH 151; CHEM 107 and CHEM 117 or BIOL 113 or PHYS 218.

   COMM 321. Strategic Communication Case Studies. (3-0). Credit 3. Strategic communication practice; application of skills including communication research, media writing and advanced media writing, visual media and public speaking; service-learning as not-for-fee consultant to a community organization. Prerequisites: COMM 323 and junior or senior classification or approval of instructor.

   COMM 403. Media, Children and Adolescents. (3-0). Credit 3. Critical analysis of popular culture and mass media issues related to children and adolescents; deconstruction of media created by, for and about children and youth. Prerequisite: Junior or senior classification or approval of instructor.

EHRD 315. Applied Human Resource Development in the Workplace. (3-0). Credit 3. Training and development context and synthesis of general industry-standard human resource practices in workplace environments for human resource practitioners. Prerequisites: EHRD 203 and EHRD 210 with a grade of C or better; junior or senior classification.

EHRD 413. Conflict Management and Dialogue. (3-0). Credit 3. Conflict management principles and practices in the workplace; engagement in meaningful conflict from a training and development perspective. Prerequisite: Junior or senior classification or approval of instructor.

ENDS 114. Introduction to Design Communication. (1-4). Credit 3. Introduction to drawing methods for non-majors; free hand drawing as a creative and communicative tool to express design thinking, architectural form and space.

FINC 446. Technical Analysis of Financial Markets. (3-0). Credit 3. Use of price, volume and other non-fundamental, market and behavioral data to analyze and predict security prices; emphasis on pattern recognition and correlation analysis over theory and casual analysis; application of technical analysis as an investment discipline for institutional portfolio management; principles, terminology, techniques and emerging theories of technical analysis. Prerequisites: FINC 351 and FINC 361.

FINC 448. Advanced Investments. (3-0). Credit 3. Application of finance theory to complex investment problems; implementation of asset pricing models, portfolio theory and arbitrage strategies; implication of principles of market efficiency and behavioral finance for selection of individual securities and portfolios. Prerequisites: FINC 351 and FINC 361.

GEOL 484. Internship. (0-0). Credit 0. Directed internship in a private firm, government agency or non-governmental organization to provide work experience related to the student’s degree program and career objectives. May be taken two times. Prerequisites: Junior or senior classification and approval of internship agency and approval of instructor.

GEOP 484. Internship. (0-0). Credit 0. Directed internship in a private firm, government agency or non-governmental organization to provide work experience related to the student’s degree program and career objectives. May be taken two times. Prerequisites: Junior or senior classification and approval of internship agency and approval of instructor.

HBRW 101. Elementary Modern Hebrew I (3-2). Credit 4. Elementary language study with oral, written and reading practice; preparation for conversation; part of class preparation to be done in the language laboratory.

HBRW 102. Elementary Modern Hebrew II. (3-2). Credit 4. Continuation of HBRW 101; part of class preparation to be done in the language laboratory. Prerequisite: HBRW 101

INTS 410. Gender and the Global Modern. (3-0). Credit 3. Relationship of the concepts of gender and modernity in the 20th and the 21st centuries from an international perspective; global theories of gender and sex across genres. Prerequisites: INTS 201; junior or senior classification or approval of instructor.

ISYS 281. Professional Development Information Systems Seminar. (1-0). Credit 1. Exposure to professional issues, contemporary information systems topics, potential MIS careers and employers. May be taken three times for credit. Prerequisite: Admission to Mays Business School; intend to major in management information systems.
ISYS 481. Information Systems Seminar (1-0). Credit 1. Exposure to professional issues, contemporary information systems topics, potential MIS careers and employers. May be taken three times for credit. Prerequisite: Admission to upper division in Mays Business School; or approval of instructor.

MEEN 210. Geometric Modeling for Mechanical Design. (1-2). Credit 2. Foundations of geometric modeling as applied to mechanical design through use of modern computer-aided design (CAD) and physical prototyping tools; basics of systematic design methodology; geometric visualization concepts: multiview orthographic, isometric, oblique, perspective; three-dimensional representations, surface and solid modeling; dimensioning and tolerancing; rapid prototyping using 3D printing. Prerequisites: Mechanical engineering major; ENGR 111.

MEEN 225. Engineering Mechanics. (2-2). Credit 3. Application of the laws of classical mechanics to simplified, plausibly real world problems or interest to mechanical engineering, including the analysis of cables, frames, trusses, beams, machines and mechanisms. Prerequisites: Mechanical engineering major; MATH 251 or MATH 253 or registration therein; PHYS 218.

MKTG 431. Marketing Analytics (3-0). Credit 3. Data driven marketing strategy, data handling and management techniques, use of statistical software to estimate marketing models, project based course focused on marking decision making. Prerequisite: MKTG 321

PERF 284. Performance Studies Internship. Credit 0 to 4. Supervised experience program conducted in the area of the student’s interest in performance studies. May be taken three times for credit. Prerequisite: PERF 101.

PERF 292. Cooperative Education in Performance Studies. Credit 0 to 3. Educational work assignment by a student in the field of his or her career interest and course of study; supervision of the student by the cooperating employer and the instructor; technical report on a related subject area approved by the instructor. May be taken two times for credit. Prerequisite: PERF 101.

PERF 484. Performance Studies Internship. Credit 0 to 4. Supervised experience program conducted in the area of the student’s interest in performance studies. May be taken three times for credit. Prerequisites: PERF 101; junior or senior classification.

PERF 492. Cooperative Education in Performance Studies. Credit 0 to 3. Educational work assignment by a student in the field of his or her career interest and course of study; supervision of the student by the cooperating employer and the instructor; technical report on a related subject area approved by the instructor. May be taken two times for credit. Prerequisites: PERF 101; junior or senior classification.


VTPB 212. Genetics in the News. (3-0). Credit 3. Use of contemporary news articles from the popular press to delve into the science of genetics and genomics and their methodologies to gain a deeper understanding of how data is analyzed and interpreted leading to news headlines. Prerequisites: Sophomore classification or approval of instructor; high school or college course in biology recommended.
VTPP 444. Practicum in Biomedical Research. (3-0). Credit 3. Team or group development of sustainable collaborations that include biomedical research, high-impact educational practices and community service; focus on connecting research experience to future career goals. Prerequisites: VTPP 423 and VTPP 427 or VTPP 434 and VTPP 435; junior or senior classification.

WFSC 404. Aquatic Ecosystems. (3-0). Credit 3. Inland and coastal zone aquatic ecosystems, lower food web structure, functioning and influence on living resources; lakes, rivers, estuaries, open bay systems, factors impacting ecosystem health and fisheries; harmful algal blooms, reduced water inflows, eutrophication and hypoxia formation as they affect food webs, recruitment of commercially and recreationally important fisheries. Prerequisite: Junior or senior classification or approval of instructor.

WFSC 444. Aquaculture I: Principles and Practices. (3-3). Credit 4. Scientific perspectives concerning major principles associated with fish production under controlled conditions; production techniques associated with prominent species produced via aquaculture throughout the world with emphasis on those cultured in the United States. Prerequisite: Junior or senior classification or approval of instructor.

3. Withdrawal of Courses

CSCE 332. Programming Language Design

4. Change in Courses

AERO 201. Introduction to Flight.

Prerequisites
From: Admitted to major degree sequence in aerospace engineering and completion of CBK courses with a grade of C or better; MATH 251 or MATH 253 or registration therein.

To: Admitted to major degree sequence in aerospace engineering; grade of C or better ENGR 111, MATH 151, MATH 152, PHYS 218; grade of C or better in MATH 251 or MATH 253 or registration therein.

AERO 210. Introduction to Aerospace Mechanics.

Prerequisites
From: AERO 201 and MATH 308 or registration therein.

To: Grade of C or better AERO 201; grade of C or better in MATH 308 or registration therein.

AERO 212. Introduction to Aerothermodynamics.

Prerequisites
From: AERO 201; MATH 308 or registration therein.

To: Grade of C or better in CHEM 107, CHEM 117; grade of C or better in AERO 201 and MATH 251, or registration therein.


Prerequisites
From: AERO 201; AERO 210 and MATH 308 or registration therein.
To: Grade of C or better in PHYS 208; grade of C or better in AERO 210 and MATH 308, or registration therein.

AERO 220. Introduction to Aerospace Computation.

Prerequisites
From: AERO 201; MATH 308 or registration therein.
To: Grade of C or better in AERO 201, ENGR 112; grade of C or better in MATH 308 or registration therein.

AERO 301. Theoretical Aerodynamics.

Prerequisites
From: AERO 201, AERO 212, AERO 220, MATH 308.
To: Grade of C or better in AERO 212, AERO 220, MATH 308.

AERO 302. Aerospace Engineering Laboratory.

Prerequisites
From: AERO 301, AERO 304, AERO 310 and ECEN 215, or registration therein.
To: Grade of C or better in ENGL 104; grade of C or better in AERO 301, AERO 304, AERO 310, ECEN 215, or registration therein.

AERO 303. High Speed Aerodynamics.

Prerequisites
From: AERO 301.
To: Grade of C or better in AERO 301.

AERO 304. Aerospace Structural Analysis I.

Prerequisites
From: AERO 214, AERO 220, MATH 308.
To: Grade of C or better in AERO 214, AERO 220, MATH 308.

AERO 306. Aerospace Structural Analysis II.

Prerequisites
From: AERO 304.
To: Grade of C or better in AERO 304.

AERO 310. Aerospace Dynamics.

Prerequisites
From: AERO 210, AERO 214, AERO 220, MATH 308.
To: Grade of C or better in AERO 210, AERO 214, AERO 220, MATH 308.

AERO 321. Dynamics of Aerospace Vehicles.

Prerequisites
From: AERO 301 and AERO 310.
To:  Grade of C or better in AERO 301 and AERO 310.

**AERO 351. Aerothermodynamics and Propulsion.**

Prerequisites
From:  AERO 303 or registration therein.
To:  Grade of C or better in AERO 303 or registration therein.

**AERO 401. Aerospace Vehicle Design I.**

Prerequisites
From:  AERO 302, AERO 303, AERO 306, AERO 321, AERO 351.
To:  Grade of C or better in AERO 302, AERO 303, AERO 306, AERO 321, AERO 351.

**AERO 402. Aerospace Vehicle Design II.**

Prerequisites
From:  AERO 401.
To:  Grade of C or better in AERO 401.

**AERO 404. Mechanics of Advanced Aerospace Structures.**

Prerequisites
From:  AERO 304 and junior or senior classification.
To:  Grade of C or better in AERO 304 and junior or senior classification.

**AERO 405. Aerospace Structural Design.**

Prerequisites
From:  AERO 306.
To:  Grade of C or better in AERO 306.

**AERO 406. Polymer Nanocomposites and their Applications.**

Prerequisites
From:  AERO 413.
To:  Grade of C or better in AERO 413.

**AERO 413. Aerospace Materials Science.**

Prerequisites
From:  AERO 306.
To:  Grade of C or better in AERO 306.

**AERO 417. Aerospace Propulsion.**

Prerequisites
From:  AERO 351.
To:  Grade of C or better in AERO 351.

Prerequisites
From: AERO 351.
To: Grade of C or better in AERO 351.

AERO 420. Aeroelasticity.

Prerequisites
From: AERO 303, AERO 306, AERO 310.
To: Grade of C or better in AERO 303, AERO 306, AERO 310.

AERO 422. Active Controls for Aerospace Vehicles.

Prerequisites
From: AERO 321.
To: Grade of C or better in AERO 321.

AERO 423. Orbital Mechanics.

Prerequisites
From: AERO 321.
To: Grade of C or better in AERO 321.

AERO 424. Spacecraft Attitude Dynamics and Control.

Prerequisites
From: AERO 321.
To: Grade of C or better in AERO 321.

AERO 425. Flight Test Engineering.

Prerequisites
From: AERO 321.
To: Grade of C or better in AERO 321.

AERO 426. Space System Design.

Prerequisites
From: AERO 306, AERO 321, AERO 351.
To: Grade of C or better in AERO 306, AERO 321, AERO 351.


Prerequisites
From: AERO 306, AERO 321, AERO 351.
To: Grade of C or better in AERO 306, AERO 321, AERO 351.
AERO 430. Numerical Simulation.

Prerequisites
From: AERO 220 or MATH 417.
To: Grade of C or better in AERO 220 or MATH 417.

AERO 435. Aerothermochemistry.

Prerequisites
From: AERO 303.
To: Grade of C or better in AERO 303.

AERO 440. Cockpit Systems and Displays.

Prerequisites
From: AERO 321 or junior or senior classification in computer science.
To: Grade of C or better in AERO 321 or junior or senior classification in computer science.


Prerequisites
From: AERO 422.
To: Grade of C or better in AERO 422.


Prerequisites
From: AERO 351; MATH 308.
To: Grade of C or better in AERO 351.

AERO 472. Airfoil and Wing Design.

Prerequisites
From: AERO 303.
To: Grade of C or better in AERO 303.

AGSM 439. Management of Agricultural Systems I.

Lecture and lab contact hours and semester credit hours
From: (1-2). Credit 2.
To: (3-0). Credit 3.

AGSM 440. Management of Agricultural Systems II.

Lecture and lab contact hours
From: (1-5). Credit 3.
To: (2-3). Credit 3.
ANTH 484. Anthropology Internship.

Prerequisites
From: ANTH 202, ANTH 210 and ANTH 225 with a grade of B or higher.
To: Junior or senior classification.

ARTS 104. Introduction to Graphic Design.

Prerequisites
From: Major in visualization only.
To: Major in visualization or minor in art.

ARTS 212. Life Drawing.

Course description and prerequisite
From: Life drawing course emphasizing structure and action of the human figure. Prerequisite: ARTS 115 or equivalent or approval of instructor and undergraduate program coordinator.
To: Emphasis on structure and action of the human figure. Prerequisite: ARTS 111 or ARTS 115 or equivalent, or approval of instructor and undergraduate program coordinator.

ARTS 305. Painting I.

Prerequisites
From: ARTS 111, ARTS 115 or any drawing class or approval of instructor and undergraduate program coordinator; junior or senior classification.
To: ARTS 111 or ARTS 115 or approval of instructor and undergraduate program coordinator; junior or senior classification.

ARTS 310. Digital Photography.

Course prefix
From: ARTS 310.
To: VIST 310.

Course title
From: Digital Photography.
To: Photography for Visualization

Course description and prerequisites
From: Creation, manipulation and critique of the digital image; composition and aesthetics; digital camera controls; exposure refinement; lighting techniques; digital work-flow; image conversion and control; color management; post-processing techniques; layering and compositing; printing technology and processes. Prerequisite: Junior or senior classification.
To: Advanced aesthetic and thematic control of the digital image; exposure refinement; advanced lighting techniques and digital compositing; digital work-flow; image conversion and control; color management; digital forensics; printing technology, processes and presentation. Prerequisites: Visualization major or approval of instructor; junior or senior classification.
ARTS 311. Black and White Photography.

Prerequisites
From: ARTS 115; VIST 106 or equivalent or approval of instructor and undergraduate program coordinator; junior or senior classification.
To: Approval of instructor and undergraduate program coordinator; junior or senior classification.

ARTS 312. Advanced Photography.

Prerequisites
From: ARTS 310 or ARTS 311.
To: ARTS 210, VIST 310 or ARTS 311.

ARTS 325. Digital Painting.

Prerequisites
From: Any drawing course or approval of instructor and undergraduate degree coordinator; junior or senior classification.*
To: ARTS 103, ARTS 115 or equivalent; junior or senior classification.*
*Field trip required.

ARTS 350. The Arts and Civilization.

Course description
From: Investigation of the image of work of selected periods in terms of criticism, aesthetic rationale, specific masters and social significance by going beyond historical chronology. May be repeated for up to 6 credit hours.
To: Investigation of the image of work of selected periods in terms of criticism, aesthetic rationale, specific masters and social significance by going beyond historical chronology.

ARTS 353. Color Theory.

Prerequisites
From: Environmental design, landscape architecture and visualization majors; junior or senior classification.
To: College of Architecture majors or art minors; junior or senior classification.

ATMO 291. Research.

Variable credit hours
From: Credit 1 to 4.
To: Credit 0 to 4.

ATMO 435. Synoptic-Dynamic Meteorology.

Prerequisites
From: ATMO 336 or equivalent.
To: ATMO 336 or equivalent; MATH 308.
ATMO 484. Internship.

Variable credit hours
From: Credit 1 to 3.
To: Credit 0 to 3.

ATMO 491. Research.

Variable credit hours
From: Credit 1 to 4.
To: Credit 0 to 4.

BAEN 301. Biological and Agricultural Engineering Fundamentals I.

Lecture contact hours and semester credit hours
From: (3-3). Credit 4.
To: (2-3). Credit 3.

BAEN 302. Biological and Agricultural Engineering Fundamentals II.

Lecture contact hours and semester credit hours
From: (3-3). Credit 4.
To: (2-3). Credit 3.

BMEN 211. Biomedical Applications of Circuits, Signals and Systems.

Prerequisites
From: Admitted to major degree sequence in biomedical engineering, BMEN 207, and MATH 308 or concurrent enrollment.
To: Admitted to major degree sequence in biomedical engineering, BMEN 207, MATH 308 or concurrent enrollment, or approval of instructor.

BMEN 305. Bioinstrumentation.

Prerequisites
From: Admitted to major degree sequence in biomedical engineering; ECEN 214, VTPP 434 and 435; junior or senior classification.
To: Admitted to major degree sequence in biomedical engineering; BMEN 211, VTPP 434 and 435; junior or senior classification; or approval of instructor.

BMEN 321. Biomedical Electronics.

Prerequisites
From: ECEN 214, VTPP 434 and VTPP 435; junior or senior classification.
To: BMEN 211; VTPP 435; junior or senior classification; or approval of instructor.


Prerequisites
From: BMEN 240; junior or senior classification.
To: Admitted to major degree sequence in biomedical engineering; VTPP 435; MATH 308; junior or senior classification; or approval of instructor.

BMEN 343. Introduction to Biomaterials.

Prerequisites
From: BMEN 240, MATH 308, PHYS 208 and junior or senior classification.
To: Admitted to major degree sequence in biomedical engineering; VTPP 435; MATH 308; junior or senior classification; or approval of instructor.

BMEN 420. Medical Imaging.

Prerequisites
From: MATH 253; junior or senior classification.
To: Admitted to major degree sequence in biomedical engineering; MATH 308; junior or senior classification; or approval of instructor.

BMEN 427. Magnetic Resonance Engineering.

Prerequisites
From: BMEN 420, ECEN 410, ECEN 411 or approval of instructor; junior or senior classification.
To: BMEN 420 or ECEN 410 or ECEN 411 or approval of instructor; junior or senior classification.

BMEN 450. Case Studies.

Prerequisites
From: BMEN 240, BMEN 305 and BMEN 342; junior or senior classification.
To: BMEN 361, BMEN 305 and BMEN 344; junior or senior classification; or approval of instructor.

BMEN 453. Analysis and Design Project I.

Prerequisites
From: BMEN 321, BMEN 322 and BMEN 342; senior classification.
To: BMEN 321, BMEN 322; BMEN 344; BMEN 253 and BMEN 353; senior classification or approval of instructor.

BMEN 454. Analysis and Design Project II.

Prerequisites
From: BMEN 321, BMEN 322, BMEN 342 and BMEN 453; senior classification.
To: BMEN 321, BMEN 322, BMEN 344 and BMEN 453; senior classification; or approval of instructor.


Prerequisites
From: 3 hours of CLAS 300-329 or approval of instructor.
To: Junior or senior classification, or approval of instructor.
CSCE 310. Database Systems.

Prerequisites
From: CSCE 221.
To: CSCE 221 with a grade of C or better; junior or senior classification.

CSCE 312. Computer Organization.

Prerequisites
From: CSCE 221.
To: CSCE 221 with a grade of C or better; junior or senior classification or approval of instructor.

CSCE 313. Introduction to Computer Systems.

Prerequisites
From: CSCE 312 or corequisite CSCE 350.
To: CSCE 221 with a grade of C or better; CSCE 312 or corequisite CSCE 350.

CSCE 314. Programming Languages.

Prerequisites
From: CSCE 221.
To: CSCE 221 with grade of C or better; junior or senior classification or approval of instructor.


Prerequisites
From: ECEN 248.
To: ECEN 248 with a grade of C or better; junior or senior classification.


Prerequisites
From: CSCE 315.
To: CSCE 313 and CSCE 315.

CSCE 411. Design and Analysis of Algorithms.

Prerequisites
From: CSCE 315.
To: Grade of C or better in CSCE 221 and CSCE 222; junior or senior classification or approval of instructor.


Prerequisites
From: CSCE 221 or approval of instructor.
To: CSCE 315 or approval of instructor.
CSCE 442. Scientific Programming.

Prerequisites
From: Knowledge of C, C++ or Fortran; MATH 304 or MATH 308 or concurrent enrollment in one of these.
To: CSCE 221 with a grade of C or better; MATH 304 or MATH 308 or concurrent enrollment.


Prerequisites
From: ECEN 248; MATH 251; knowledge of C or Ada, or approval of instructor.
To: CSCE 313 and MATH 152.


Prerequisites
From: CSCE 313; junior or senior classification or approval of instructor.
To: CSCE 313 and CSCE 315; junior or senior classification; or approval of instructor.

CSCE 482. Senior Capstone Design.

Prerequisites
From: Senior classification; at least two CSCE courses from one track including 411.
To: Senior classification; CSCE 315, CSCE 411, and two additional CSCE tracked courses.


Prerequisites
From: ECEN 248.
To: Grade of C or better in ECEN 248; junior or senior classification.

ECEN 403. Electrical Design Laboratory I.

Lab contact hours
From: (2-2). Credit 3.
To: (2-3). Credit 3.

Prerequisites
From: ECEN 303, ECEN 314, ECEN 322, ECEN 325, ECEN 350, and ECEN 370 with a grade of C or better; COMM 205 or COMM 243 or ENGL 210; senior classification.
To: COMM 205 or COMM 243 or ENGL 210; grade of C or better in ECEN 314, ECEN 325, ECEN 350; grade of C or better in ECEN 303, ECEN 322, ECEN 370 or grade C or better in CSCE 315, ECEN 449, STAT 211 or ECEN 303; senior classification.

ECEN 410. Medical Imaging.

Prerequisites
From: MATH 222 or MATH 251 or MATH 253; ECEN 314 or ECEN 444.
To: Grade of C or better in MATH 222 or MATH 251 or MATH 253; ECEN 444 or grade of C or better in ECEN 314; junior or senior classification.

**ECEN 411. Introduction to Magnetic Resonance Imaging and Magnetic Resonance Spectroscopy.**

Prerequisites
- From: Junior or senior classification; MATH 251, PHYS 208.
- To: Grade of C or better in MATH 251 and PHYS 208; junior or senior classification.

**ECEN 412. Ultrasound Imaging.**

Prerequisites
- From: ECEN 314 or approval of instructor; junior or senior classification.
- To: Grade of C or better in ECEN 314; junior or senior classification.

**ECEN 415. Physical and Economical Operations of Sustainable Energy Systems.**

Prerequisites
- From: ECEN 214, ECEN 420, ECEN 460 or approval of instructor.
- To: Grade of C or better in ECEN 214; ECEN 420; ECEN 460; junior or senior classification.

**ECEN 419. Genomic Signal Processing.**

Prerequisites
- From: ECEN 314, junior or senior classification or approval of instructor.
- To: Grade of C or better in ECEN 314; junior or senior classification.

**ECEN 420. Linear Control Systems.**

Prerequisites
- From: ECEN 314; MATH 308.
- To: Grade of C or better in ECEN 314 and MATH 308; junior or senior classification.

**ECEN 424. Fundamentals of Networking.**

Prerequisites
- From: ECEN 303 or STAT 211.
- To: Grade of C or better in ECEN 303 or STAT 211; junior or senior classification.

**ECEN 434. Optimization for Electrical and Computer Engineering Applications.**

Prerequisites
- From: MATH 304 or MATH 309 or MATH 311; MATH 251.
- To: Grade of C or better in MATH 304 or MATH 309 or MATH 311; grade of C or better in MATH 251; junior or senior classification.

**ECEN 440. Introduction to Thin Film Science and Technology.**

Prerequisites
- From: Junior or senior classification; admission to upper level in College of Engineering.
- To: Junior or senior classification.
ECEN 442. DSP Based Electromechanical Motion Control.

Prerequisites
From: ECEN 314 or approval of instructor; junior or senior classification.
To: Grade of C or better in ECEN 314; junior or senior classification.

ECEN 444. Digital Signal Processing.

Prerequisites
From: ECEN 314.
To: Grade of C or better in ECEN 314; junior or senior classification.


Prerequisites
From: ECEN 322.
To: Grade of C or better in ECEN 322; junior or senior classification.


Prerequisites
From: ECEN 314; junior or senior classification.
To: Grade of C or better in ECEN 314; junior or senior classification.

ECEN 449. Microprocessor Systems Design.

Prerequisites
From: ECEN 248.
To: Grade of C or better in ECEN 248; junior or senior classification.


Prerequisites
From: ECEN 322.
To: Grade of C or better in ECEN 322; junior or senior classification.

ECEN 453. Microwave Solid-State Circuits and Systems.

Prerequisites
From: ECEN 322.
To: Grade of C or better in ECEN 322; junior or senior classification.


Prerequisites
From: ECEN 214 and ECEN 248.
To: Grade of C or better in ECEN 214 and ECEN 248; junior or senior classification.
ECEN 455. Digital Communications.

Prerequisites
From: ECEN 314.
To: Grade of C or better in ECEN 314; junior or senior classification.

ECEN 457. Operational Amplifiers.

Prerequisites
From: ECEN 326.
To: Grade of C or better in ECEN 325; junior or senior classification.

ECEN 458. Active Filter Analysis and Design.

Prerequisites
From: ECEN 325.
To: Grade of C or better in ECEN 325; junior or senior classification.


Prerequisites
From: ECEN 215 or ECEN 314.
To: Grade of C or better in ECEN 215 or ECEN 314; junior or senior classification.

ECEN 460. Power System Operation and Control.

Prerequisites
From: ECEN 215 or ECEN 314.
To: Grade of C or better in ECEN 215 or ECEN 314; junior or senior classification.


Prerequisites
From: ECEN 322 and ECEN 370.
To: Grade of C or better in ECEN 322 and ECEN 370; junior or senior classification.

ECEN 463. Magnetic Resonance Engineering.

Prerequisites
From: BMEN 420, ECEN 410, ECEN 411, or approval of instructor; junior or senior classification.
To: BMEN 420 or ECEN 410 or ECEN 411 or approval of instructor; junior or senior classification.

ECEN 464. Optical Engineering.

Prerequisites
From: ECEN 322 and ECEN 370.
To: Grade of C or better in ECEN 322 and ECEN 370; junior or senior classification.

Prerequisites
From: ECEN 248.
To: Grade of C or better in ECEN 248; junior or senior classification.

ECEN 472. Microelectronic Circuit Fabrication.

Prerequisites
From: ECEN 325 and ECEN 370.
To: Grade of C or better in ECEN 325 and ECEN 370; junior or senior classification.

ECEN 473. Microelectronic Device Design.

Prerequisites
From: ECEN 325, ECEN 370.
To: Grade of C or better in ECEN 325 and ECEN 370; junior or senior classification.

ECEN 475. Introduction to VLSI Systems Design.

Prerequisites
From: ECEN 248 and ECEN 325.
To: Grade of C or better in ECEN 248 and ECEN 325; junior or senior classification.


Prerequisites
From: ECEN 322 and ECEN 370, or approval of instructor.
To: Grade of C or better in ECEN 322 and ECEN 370; junior or senior classification.

ECEN 480. RF and Microwave Wireless Systems.

Prerequisites
From: ECEN 322.
To: Grade of C or better in ECEN 322; junior or senior classification.

EDCI 365. Using Technology in Elementary Classrooms.

Course title
From: Using Technology in Elementary Classrooms.
To: Using Technology Classrooms.

EDCI 453. Early Childhood Education.

Course number
From: EDCI 453.
To: EDCI 353.

Course title
From: Early Childhood Education.
To: Early Childhood through Adolescent Education.
Course description and prerequisites
From: Early childhood approaches and instructional materials appropriate for early childhood school programs, kindergarten and primary grades. Prerequisites: EPSY 320; concurrent enrollment in EDCI 364.
To: Early childhood through adolescent approaches and instructional materials appropriate for EC through middle school programs; impact of research and theory on child development from gestation to early adolescence on instructional practices. Prerequisites: Admission to teacher education.

EDCI 454. Curriculum for Young Children.

Course number
From: EDCI 454.
To: EDCI 354.

Course title
From: Curriculum for Young Children.
To: Early Childhood and Adolescent Curriculum and Lesson Design.

Course description and prerequisites
From: Curriculum models used in educational environments designed for young children; assessment application. State-adopted curriculum materials, their use and expansion; curriculum organization and essential elements for young children. Prerequisites: EDCI 364 and EDCI 453; admission to teacher education.
To: Examination of curriculum models used in educational environments designed for young children through adolescents and the organization of the curriculum; investigation of state-adopted curriculum knowledge and skills standards and materials as well as their use and expansion.

ENGR 410. Global Engineering.

Course title
From: Global Engineering.
To: Global Engineering Design.

Course description
From: A framework for the systematic study of important facets of an international engineering project; decision making methods that allow the integration of quantitative and qualitative information; applications of the framework and decision methods using real case studies.
To: Intercultural models and their application to engineering design in diverse, multinational and multidisciplinary settings; engineering design project working in international teams of students, faculty and industry experts; applying engineering skills to the project; includes the study and application of intercultural models, global enterprise fundamentals and remote collaboration technologies; required for the International Engineering Certificate.
ENTC 181. Manufacturing and Assembly Processes I.

Prerequisites
From: ENDG 105 with a grade of C or better.
To: Grade of C or better in ENGR 111 and ENGR 112. Corequisite: ENDG 105.


Prerequisites
From: ENTC 275, PHYS 208, PHYS 218, CBK.
To: ENTC 275, ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, PHYS 218 with a grade of C or better.

ENTC 313. Industrial Welding Processes.

Prerequisites
From: Grade of C or better in ENTC 181 and ENTC 207; completion of CBK courses with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology major.
To: Grade of C or better in ENTC 181 and ENTC 207 and ENTC 376; grade of C or better in ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218; junior or senior classification in manufacturing and mechanical engineering technology major.

ENTC 320. Quality Assurance.

Prerequisites
From: STAT 211 with a grade of C or better; completion of CBK courses with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.
To: STAT 211 with a grade of C or better; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.


Prerequisites
From: Grade of C or better in ENTC 210 and MATH 152; completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
To: Grade of C or better in ENTC 210 and MATH 152; completion of ENGL 104, MATH 151, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology.

ENTC 333. Product Development

Prerequisite
From: Completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
To: Completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology.

ENTC 349. Microcontroller Architecture.

Prerequisites
From: Grade of C or better in ENTC 219 and ENTC 269; completion of CBK courses with a grade of C or better; electronic systems engineering technology major.
To: Grade of C or better in ENTC 219 and ENTC 269; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; electronic systems engineering technology.

ENTC 350. Analog Electronics.

Prerequisites
From: ENTC 211 with a grade of C or better; completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
To: ENTC 211 with a grade of C or better; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology.

ENTC 352. Electronics Testing I.

Prerequisites
From: ENTC 350 with a grade of C or better; completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
To: ENTC 350 with a grade of C or better; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology.


Prerequisites
From: Grade of C or better in ENTC 211 and PHYS 208; completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
To: Grade of C or better in ENTC 211 and PHYS 208; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology.

ENTC 359. Electronic Instrumentation.

Prerequisites
From: Grade of C or better in ENTC 349 and ENTC 350; completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
To: Grade of C or better in ENTC 349 and ENTC 350; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology.

Prerequisites
From: Grade of C or better in ENTC 181, ENTC 206, ENTC 207 and ENTC 275; completion of CBK courses with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.
To: Grade of C or better in ENTC 181, ENTC 206, ENTC 207 and ENTC 275; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.

ENTC 363. Mechanical Design Applications I.

Prerequisites
From: ENTC 376 with a grade of C or better; completion of CBK courses with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.
To: ENTC 376 with a grade of C or better; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.

ENTC 369. Embedded Systems Software.

Prerequisites
From: ENTC 349 with a grade of C or better; completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
Corequisite: ENTC 350.
To: ENTC 349 with a grade of C or better; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology. Corequisite: ENTC 350.

ENTC 370. Thermodynamics for Technologists.

Prerequisites
From: PHYS 218 with a grade of C or better; completion of CBK courses with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.
To: PHYS 218 with a grade of C or better; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.


Prerequisites
From: Grade of C or better in ENTC 207 and ENTC 275; completion of CBK courses with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.
To: Grade of C or better in ENTC 207 and ENTC 275; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.

**ENTC 380. Computer-Aided Manufacturing.**

Prerequisites
From: Grade of C or better in ENTC 181 and MATH 152; completion of CBK courses with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.

To: Grade of C or better in ENTC 181 and MATH 152; completion of ENGL 104, MATH 151, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.

**ENTC 383. Manufacturing Information Systems.**

Prerequisites
From: ENTC 380 with a grade of C or better; completion of CBK courses with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.

To: ENTC 380 with a grade of C or better; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.

**ENTC 402. Inspection Methods and Procedures.**

Prerequisites
From: Grade of C or better in ENTC 281 and ENTC 376; completion of CBK courses with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.

To: Grade of C or better in ENTC 281 and ENTC 376; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.

**ENTC 410. Manufacturing Automation and Robotics.**

Prerequisites
From: Grade of C or better in ENTC 361, ENTC 376, ENTC 380, ENTC 383 and IDIS 300; completion of CBK courses with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.

To: Grade of C or better in ENTC 361, ENTC 376, ENTC 380, ENTC 383 and IDIS 300; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in manufacturing and mechanical engineering technology.
ENTC 412. Production and Inventory Planning.

Prerequisites
From: Grade of C or better in ENTC 320, ENTC 380, ENTC 383 and ISEN 302; completion of CBK courses with a grade of C or better; senior classification in manufacturing and mechanical engineering technology.
To: Grade of C or better in ENTC 320, ENTC 380, ENTC 383 and ISEN 302; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; senior classification in manufacturing and mechanical engineering technology.


Prerequisites
From: ENTC 315 with a grade of C or better; completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
To: ENTC 315 with a grade of C or better; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology.

ENTC 419. Engineering Technology Capstone I. (3-0).

Prerequisites
From: Grade of C or better in ENTC 369 and ENTC 333; completion of CBK courses with a grade of C or better; senior classification in electronic systems engineering technology.
To: Grade of C or better in ENTC 369 and ENTC 333; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; senior classification in electronic systems engineering technology.

ENTC 420. Engineering Technology Capstone II.

Prerequisites
From: Completion of CBK courses with a grade of C or better; senior classification in electronic systems engineering technology; final semester of technical coursework and successful completion of ENTC 419 or approval of department.
To: Completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; senior classification in electronic systems engineering technology; final semester of technical coursework and successful completion of ENTC 419 or approval of department.

ENTC 422. Manufacturing Technology Projects.

Prerequisites
From: ENTC 429 with a grade of C or better; completion of junior-level courses; must be taken semester of graduation; approval of instructor; completion of CBK courses with a grade of C or better; senior classification in manufacturing and mechanical engineering technology.
To: ENTC 429 with a grade of C or better; completion of junior-level courses; must be taken semester of graduation; approval of instructor; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; senior classification in manufacturing and mechanical engineering technology.
ENTC 429. Managing People and Projects in a Technological Society.

**Prerequisites**
- From: ISEN 302 with a grade of C or better, or approval of instructor; must be taken during long semester prior to ENTC 422; completion of CBK courses with a grade of C or better; senior classification in manufacturing and mechanical engineering technology.
- To: ISEN 302 with a grade of C or better, or approval of instructor; must be taken during long semester prior to ENTC 422; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; senior classification in manufacturing and mechanical engineering technology.

ENTC 435. Data Communications.

**Prerequisites**
- From: ENTC 315 and ENTC 369; admitted to major degree sequence (upper-level) in engineering technology.
- To: ENTC 315 and ENTC 369 with a grade of C or better; junior or senior classification in electronic systems engineering technology.

ENTC 452. Electronics Testing II.

**Prerequisites**
- From: Grade of C or better in ENTC 349 and ENTC 352; completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
- To: Grade of C or better in ENTC 349 and ENTC 352; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology.


**Prerequisites**
- From: ENTC 355 with a grade of C or better; completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
- To: ENTC 355 with a grade of C or better; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology.

ENTC 462. Control Systems.

**Prerequisites**
- From: Grade of C or better in ENTC 359 and ENTC 369; completion of CBK courses with a grade of C or better; junior or senior classification in electronic systems engineering technology.
- To: Grade of C or better in ENTC 359 and ENTC 369; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; junior or senior classification in electronic systems engineering technology.
ENTC 463. Mechanical Design Applications II.

Prerequisites
From: Grade of C or better in ENTC 361 and ENTC 363; completion of CBK courses with a grade of C or better; senior classification in manufacturing and mechanical engineering technology.
To: Grade of C or better in ENTC 361 and ENTC 363; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better; senior classification in manufacturing and mechanical engineering technology.

Course Prefix Change
Dwight Look College of Engineering
Department of Engineering Technology and Industrial Distribution
ENTC 181, ENTC 206, ENTC 207, ENTC 275, ENTC 281, ENTC 303, ENTC 313, ENTC 320, ENTC 361, ENTC 363, ENTC 370, ENTC 376, ENTC 380, ENTC 381 (414), ENTC 383, ENTC 402, ENTC 405, ENTC 410, ENTC 412, ENTC 418, ENTC 422, ENTC 429, ENTC 463 - Request for a course prefix change from ENTC to MMET

GEOG 291. Research.

Variable credit hours
From: Credit 1 to 4.
To: Credit 0 to 4.

GEOG 332. Thematic Cartography.

Course number
From: GEOG 332.
To: GEOG 232.

Course title
From: Thematic Cartography.
To: Cartography and Visualization.

Course description
From: Introduction to principles of thematic map compilation and design; history of thematic mapping; projections; data management and symbolization; common types and styles of thematic maps; computer cartography.
To: Introduction to science and art of map production; principles of thematic map compilation and design; history of thematic mapping; map projections; data management and symbolization; common types and styles of thematic maps.

GEOG 380. Workshop in Environmental Studies.

Prerequisite
From: Approval of department head.
To: GEOG 330.
GEOG 398. Interpretation of Aerial Photographs.

Prerequisites:
From: MATH 102 and one of the following: SCSC 301, BIOL 113, FRSC 101, GEOG 203, GEOL 101, RENR 205, WFSC 101.
To: Junior or senior classification or approval of instructor.


Course title
From: Digital Image Processing in the Geosciences.
To: Advanced Remote Sensing.

GEOG 484. Internship.

Variable credit hours
From: Credit 1 to 12.
To: Credit 0 to 12.

GEOG 491. Research.

Variable credit hours
From: Credit 1 to 4.
To: Credit 0 to 4.

GEOL 291. Research.

Variable credit hours
From: Credit 1 to 4.
To: Credit 0 to 4.

GEOL 491. Research.

Variable credit hours
From: Credit 1 to 4.
To: Credit 0 to 4.


Variable credit hours
From: Credit 1 to 4.
To: Credit 0 to 4.

GEOP 491. Research. Credit 1 to 4.

Variable credit hours
From: Credit 1 to 4.
To: Credit 0 to 4.

IDIS 300. Industrial Electricity.
Prerequisite
From: Industrial distribution or engineering technology major, junior or senior classification, PHYS 208 or PHYS 219; completion of CBK courses with a grade of C or better.
To: Industrial distribution or engineering technology major, junior or senior classification, PHYS 208 or PHYS 219; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 303. Mechanical Power Transmission.

Prerequisite
From: Industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: Industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 330. Sales Engineering.

Prerequisites
From: IDIS 240; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: IDIS 240; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 340. Manufacturer Distributor Relations

Prerequisites
From: IDIS 240; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: IDIS 240; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 343. Distribution Logistics.

Prerequisites
From: STAT 201, STAT 211 or STAT 303; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: STAT 201, STAT 211, or STAT 303; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 344. Distributor Information and Control Systems.

Prerequisites
From: IDIS 343; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: IDIS 343; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.
IDIS 400. Industrial Automation.

Prerequisites
From: IDIS 300; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: IDIS 300; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 403. Fluid Power Transmission.

Prerequisites
From: IDIS 303; PHYS 208 or PHYS 219; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: IDIS 303; PHYS 208 or PHYS 219; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 420. Contemporary Topics in Electronics Distribution: Going Green.

Prerequisites
From: IDIS 300; IDIS 343; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: IDIS 300; IDIS 343; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 421. Healthcare Distribution Networks.

Prerequisites
From: IDIS 343; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: IDIS 343; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 424. Purchasing Applications in Distribution.

Prerequisites
From: IDIS 340; IDIS 343; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: IDIS 340; IDIS 343; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 434. The Quality Process in Distribution

Prerequisites
From: IDIS 344; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: IDIS 344; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 444. Ethics and Leadership in Distribution.

Prerequisites
From: IDIS 330; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: IDIS 330; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 454. New Directions in Distributor Competitiveness.

Prerequisites
From: Admitted to major degree sequence (upper level) in industrial distribution; junior or senior classification.
To: Junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 455. Humanitarian Distribution Networks

Prerequisites
From: IDIS 343; admitted to major degree sequence (upper level) in industrial distribution; junior or senior classification.
To: IDIS 343; junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

IDIS 464. Distributor Operations and Financial Management

Prerequisites
From: ACCT 209; IDIS 343; industrial distribution major, junior or senior classification; completion of CBK courses with a grade of C or better.
To: ACCT 209; IDIS 343; industrial distribution major, junior or senior classification; completion of ENGL 104, MATH 151, MATH 152, CHEM 107 and CHEM 117, and PHYS 218 with a grade of C or better.

INST 222. Foundations of Education in a Multicultural Society.

Prerequisite
From: Junior classification or above.
To: None.

INST 462. English as a Second Language Methods I.

Course number
From: INST 462.
To: INST 362.
INST 463. English as a Second Language Methods II.

Course number
From: INST 463.
To: INST 363.

Prerequisite
From: None.
To: INST 362

ISYS 250. Business Programming Logic and Design.

Course description and prerequisites
From: Development of structured and object-oriented program logic and design in solving business programming problems using Visual Basic; emphasis on enforcing good techniques and logical thinking. Prerequisites: ISYS 210 or approval of instructor; sophomore classification in business.
To: Development of structured and object-oriented program logic and design in solving business programming problems; writing, documenting, debugging and testing computer code; emphasis on good coding techniques and logical thinking. Prerequisite: ISYS 210 or approval of instructor.

ISYS 310. Data Communications and Network-Based Systems.

Course title
From: Data Communications and Network-Based Systems.
To: Network Communications and Infrastructure.

Course description and prerequisites
From: A survey of concepts, technology and applications of on-line and network-based systems in business data communications; analysis and design of data communications, requirements in an information system environment and their impact on business organizations. Prerequisite: ISYS 210 and admission to upper division in Mays Business School.
To: Concepts, technologies and applications of on-line and network-based systems; analysis and design of data communications; requirements in an information system environment; installation, configuration and management of virtual servers. Prerequisite: ISYS 250; admission to upper division in Mays Business School.

ISYS 315. Database Management Systems.

Course title
From: Database Management Systems.
To: Database Programming.

Course description and prerequisites
From: Database design; use and application of Database Management Systems (DBMS) in the solution of business problems; database programming. Prerequisites: Admission to upper division in Mays Business School; ISYS 250.
To: Use and application of Structured Query Language (SQL); Database Management Systems (DBMS) in the solution of business problems; database programming. Prerequisites: ISYS 310; ISYS 320; or approval of instructor.

**ISYS 320. Business Systems Analysis and Design.**

Prerequisite

From: ISYS 315 or concurrent enrollment.
To: ISYS 250; admission to upper division in Mays Business School.

**ISYS 410. Management of Information Systems.**

Course description and prerequisites

From: Theoretical and practical issues for managing computerized information systems; planning and control functions of the firm; emphasis on case studies of design projects. Prerequisite: Senior classification in business or approval of instructor.

To: Strategic management of information systems; change and risk management processes during information systems implementation; role of information systems to support business goals; writing business cases for request for proposals and responses; project management techniques. Prerequisite: ISYS 310; ISYS 320; or approval of instructor.

**ISYS 415. Large-Scale Information Systems Project.**

Course title

From: Large-Scale Information Systems Project.
To: Information Systems Capstone Project

Course description and prerequisites

From: Design and implementation of large scale business application projects needing database management system and networks; multi-language and/or multi-platform environments; very large legacy system upgrade and maintenance; platform migration. Prerequisites: ISYS 320; senior classification or approval of instructor.

To: Design and development of information system software based on technical specifications; multi-platform environment; database server and web server software deployment. Prerequisites: ISYS 315; ISYS 410; or approval of instructor.

**KINE 431. Ropes Course and Group Process.**

Prerequisite

From: KINE 199 (Venture Dynamics).
To: Junior or senior classification; approval of instructor.

**LAND 254. Landscape Architecture Communications I.**

Prerequisite

From: ENDS 115 or approval of instructor.
To: None.
LAND 318. Landscape Design I.

Prerequisites
From: LAND 255; junior or senior classification.
To: LAND 255; junior or senior classification or approval of instructor.

LAND 319. Landscape Design II.

Prerequisites
From: LAND 318 and LAND 329; junior and senior classification.
To: LAND 318 and LAND 329.

LAND 329. Landscape Construction I.

Semester credit hours
From: (2-4). Credit 3.
To: (2-4). Credit 4.

Prerequisite
From: Junior or senior classification.
To: Junior or senior classification or approval of instructor.

LAND 331. Landscape Construction III.

Semester credit hours
From: (2-4). Credit 3.
To: (2-4). Credit 4.


Prerequisite
From: Junior and senior classification.
To: Junior and senior classification or approval of instructor.

LAND 421. Landscape Design VI.

Prerequisite
From: None.
To: LAND 321.

LAND 484. Internship.

Course title
From: Internship.
To: Summer Internship.

Lecture and lab contact hours and semester credit hours
From: (3-0). Credit 3.
To: (0-0). Credit 0.
Course description and prerequisites

From: Practical experience in an office of design allied professionals; 12 week internship with a minimum of 480 hours; continuous employment; departmental pre-approval through the department internship coordinator required. May not be repeated for credit.
Prerequisites: Upper level classification and approval of internship coordinator.
To: Practical experience in an office of design allied professionals; 10 week internship with a minimum of 400 hours; continuous employment; departmental pre-approval through the department internship coordinator required. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Upper level classification and approval of internship coordinator; LAND 321.

MASC 351. Problem Solving in Mathematics.

Prerequisites
From: 9 hours of 300-level mathematics courses; admission to teacher education; junior classification.
To: 6 hours of mathematics.

MEEN 221. Statics and Particle Dynamics.

Prerequisites
From: Admission to upper division in an engineering major; MATH 251 or MATH 253 or registration therein; PHYS 218.
To: For non-mechanical engineering majors; admission to an engineering major; MATH 251 or MATH 253 or registration therein; PHYS 218.

MEEN 260. Mechanical Measurements.

Prerequisites
From: MEEN 221, ECEN 215, MATH 308 and MEEN 315 or registration therein.
To: MEEN 225, ECEN 215, MATH 308 and MEEN 315 or registration therein.

MEEN 315. Principles of Thermodynamics.

Prerequisites
From: MEEN 221; MATH 251 or MATH 253; junior or senior classification.
To: MEEN 225; MATH 251 or MATH 253; junior or senior classification.

MEEN 344. Fluid Mechanics.

Prerequisite
From: MEEN 221 and MEEN 315.
To: MEEN 225 and MEEN 315.

MEEN 363. Dynamics and Vibration.

Prerequisites
From: MEEN 211; MATH 308; MEEN 357 or CVEN 302, or registration therein; CVEN 305 or registration therein.
To: MEEN 225; MATH 308; MEEN 357 or CVEN 302, or registration therein; CVEN 305 or registration therein.

**MEFB 352. Curriculum and Instruction for Middle Grades Curriculum.**

Course number
From: MEFB 352.
To: MEFB 452.

Course title
From: Curriculum and Instruction for Middle Grades Curriculum.
To: Curriculum and Instruction for Middle Grades.

Course description and prerequisites
From: Study of educational theory and instructional strategies appropriate to middle grades education including planning and development of interdisciplinary and multidisciplinary curricula; student centered learning and methodologies. Field based course. Prerequisites: MEFB 351; admission to teacher education; junior classification.
To: Study of educational theory and instructional strategies appropriate to middle grades education including planning and development of interdisciplinary and multidisciplinary curricula; student centered learning and methodologies. Prerequisites: Admission to teacher education; senior classification.

**MEFB 460. Math Methods in Middle Grades.**

Prerequisites
From: MEFB 352; admission to teacher education; senior classification. Corequisites: MEFB 470; MASC 450.
To: MASC 351 and MASC 450; admission to teacher education; senior classification. Corequisites: MEFB 470, MEFB 352 and RDNG 490.

**MEFB 470. Science Methods in Middle Grades.**

Prerequisites
From: MEFB 352; admission to teacher education; senior classification. Corequisites: MEFB 460; MASC 450.
To: Admission to teacher education; senior classification. Corequisites: MEFB 452, MEFB 460, RDNG 490.

**MEFB 497. Residency in Middle Grades Education.**

Course title
From: Residency in Middle Grades Education.
To: Supervised Clinical Teaching.

Course description and prerequisites
From: Observation and participation in an accredited public school middle grades classroom; techniques of teaching student’s teaching fields; appropriate instructional strategies for assigned student population. May be taken two times. Prerequisites: Completion of methods courses; admission to teacher education; senior classification.
To: Culmination of teaching education program; integrate and apply knowledge and skills learned from program of study while observing and participating in accredited schools with university supervision. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Admission and retention in teacher education program; successful completion of all coursework.

**MGMT 470. Small Business Management and Growth.**

Course title
From: Small Business Management and Growth.
To: Entrepreneurial Small Business

Course description
From: Unique aspects of managing and growing small businesses including strategic and operational planning; ethical issues; organizational controls and tools; marketing management and techniques; financial analysis and accounting; risk management; securing growth capital; franchising; family businesses and succession; human resource management; international opportunities.
To: Exploration of practical approaches to growing a small business, evaluating and projecting financial performance, raising capital, legal formations and issues, human resource management, business plan development, franchising and family business; networking opportunities with local business leaders, successful former student entrepreneurs and current student entrepreneurs operating at the student incubator.

**MKTG 323. Marketing Research.**

Prerequisites
From: MKTG 321; SCMT 303.
To: MKTG 321; SCMT 303 or AP STAT 301 or AP STAT 302 or AP STAT 303.

**MUSC 317. Sound Recording.**

Course title
From: Sound Recording.
To: Recording and the Producer.

Course description
From: A theoretical and practical study of studio recording techniques; acoustics and psychoacoustics, microphone selection and placement, multi-track digital recording and mixing, digital signal processing, MIDI and SMPTE synchronization and audio post-production techniques; recording projects designed to develop engineering skills and techniques.
To: Tools and techniques of studio recording; the studio as compositional tool; recorded literature examining the creative and ideological impact of the producer; recording projects applying course techniques and exploring aesthetic concepts.

**OCNG 291. Research.**

Variable credit hours
From: Credit 1 to 4.
To: Credit 0 to 4.
OCNG 350. Marine Pollution.

Prerequisite
From: OCNG 251 or approval of instructor.
To: Junior or senior classification or approval of instructor.

OCNG 491. Research.

Variable credit hours
From: Credit 1 to 9.
To: Credit 0 to 9.

PETE 225. Introduction to Drilling Systems.

Prerequisites
From: ENGR 112, MATH 152, PHYS 218.
To: Grade of C or better in ENGR 112, MATH 152 and PHYS 218.

PETE 310. Reservoir Fluids.

Prerequisites
From: CHEM 107, MATH 251, MEEN 315, PETE 311. Corequisite: MATH 308.
To: Grade of C or better in CHEM 107 and CHEM 117; MATH 251, MEEN 315, PETE 311. Corequisite: MATH 308.

PETE 311. Reservoir Petrophysics.

Prerequisites
From: MATH 251, PHYS 208. Corequisite: GEOL 104.
To: Grade of C or better in MATH 251 and PHYS 208. Corequisite: GEOL 104.

PETE 335. Technical Presentations I.

Prerequisites
From: COMM 205, junior or senior classification, petroleum engineering majors only; or approval of department head.
To: COMM 203, COMM 205 or ENGL 210; junior or senior classification.

PETE 355. Drilling Engineering.

Prerequisites
From: PETE 225, PETE 314; Corequisites: PETE 321, PETE 325.
To: PETE 225 with a grade C or better, PETE 314; Corequisites: PETE 321, PETE 325.

PETE 401. Reservoir Simulation.

Prerequisites
From: PETE 310, PETE 321, PETE 323, PETE 324.
To: PETE 310, PETE 321, PETE 323, PETE 324, PETE 353.
PETE 402. Integrated Asset Development.

Prerequisites
From: PETE 355, PETE 404, PETE 410.
To: PETE 355, PETE 401, PETE 404, PETE 410.

RDNG 461. Teaching Reading Through Children’s Literature.

Prerequisites
From: RDNG 351 and RDNG 361. Should be taken concurrently with RDNG 460.
To: RDNG 351, RDNG 361.

RDNG 468. Essential Foundations of Language and Literacy for All Learners.

Prerequisites
From: None.
To: RDNG 351 or RDNG 372 or SPED 412.

TEED 425. Supervised Student Teaching.

Course title
From: Supervised Student Teaching
To: Supervised Clinical Teaching

Course description
From: Culmination of secondary teacher education program taking place at school sites. Students begin with observation and move to full responsibility. Special emphasis is given to demonstrating an ability to organize and present concepts and skills in meaningful ways, to incorporate technology effectively and to work with students from diverse backgrounds. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Completion of Phases I, II and III and Practicum I, Phase IV of the secondary program; admission to teacher education program and to student teaching.
To: Culmination of teacher education program; integrate and apply knowledge and skills learned from program of study while observing and participating in accredited schools with university supervision. Must be taken on a satisfactory/unsatisfactory basis. Prerequisites: Admission and retention in teacher education program; successful completion of all coursework.


Prerequisites
From: TEFB 273; admission to teacher education; concurrent enrollment in RDNG 467, TEFB 412 and TEFB 413 required.
To: Admission to teacher education; concurrent enrollment in RDNG 467, TEFB 412 and TEFB 413.


Prerequisites
From: TEFB 273; MATH 365 and MATH 366; admission to teacher education; concurrent enrollment in RDNG 467, TEFB 410 and TEFB 413 required.
To: MATH 365 and MATH 366; admission to teacher education; concurrent enrollment in RDNG 467, TEFB 410 and TEFB 413.

**TEFB 426. Supervised Student Teaching.**

Course title

From: Supervised Student Teaching.
To: Supervised Clinical Teaching.

Course description

From: Observation and participation in an accredited public school classroom; techniques of teaching student's teaching fields and appropriate instructional strategies for assigned student population. For students pursuing the baccalaureate option of the interdisciplinary studies program. Must be taken on a satisfactory/unsatisfactory basis.
Prerequisites: Admission to teacher education program and to student teaching.

To: Culmination of teacher education program; integrate and apply knowledge and skills learned from program of study while observing and participating in accredited schools with university supervision. Must be taken on a satisfactory/unsatisfactory basis.
Prerequisites: Admission and retention in teacher education program; successful completion of all coursework.

**TEFB 429. Supervised Student Teaching.**

Course title

From: Supervised Student Teaching.
To: Supervised Clinical Teaching.

Course description

From: Observation and participation in an accredited public school classroom; techniques of teaching student's teaching fields and appropriate instructional strategies for assigned student population. For students pursuing the baccalaureate option of the interdisciplinary studies program. Must be taken on a satisfactory/unsatisfactory basis.
Prerequisites: Admission to teacher education program and to student teaching.

To: Culmination of teacher education program; integrate and apply knowledge and skills learned from program of study while observing and participating in accredited schools with university supervision. Must be taken on a satisfactory/unsatisfactory basis.
Prerequisites: Admission and retention in teacher education program; successful completion of all coursework.

**TEFB 471. Dynamics and Management in Multicultural/Inclusionary Learning Environments.**

Course number

From: TEFB 471.
To: TEFB 371.

Prerequisites

From: Senior classification; admission to teacher education; concurrent enrollment in TEFB 410, TEFB 412, TEFB 413 and RDNG 467.

To: Junior classification; admission to teacher education; concurrent enrollment in EDCI 454.

Prerequisites
From: THAR 135, THAR 245, one of the following upper division design courses: THAR 345, THAR 355, or THAR 360; junior or senior classification; or approval of instructor.
To: PEFR 202 or THAR 135; THAR 245; junior or senior classification; or approval of instructor.

THAR 445. Design as Performance.

Prerequisites
From: THAR 135, THAR 245, one of the following upper division design courses: THAR 345, THAR 355, or THAR 360; junior or senior classification; or approval of instructor.
To: THAR 245 and junior or senior classification; or approval of instructor.

UGST 181. First Year Seminar.

Variable credit hours
From: (1-0). Credit 1.
To: Credit 0 to 3.

Course description
From: Seminar on various contemporary topics; introduction to high quality college instruction and research; focus on writing, speaking, discussion and research; open to all majors; restricted to first-time-in-college students and limited in size to provide small class experience.
To: Seminar on various contemporary topics; introduction to high quality college instruction and research; focus on writing, speaking, discussion and research; open to all majors; restricted to first-time-in-college students and limited in size to provide small class experience. May be taken 2 times for credit.

UGST 182. Topics in Undergraduate Studies.

Variable credit hours
From: Credit 1 to 3.
To: Credit 0 to 3.


Variable credit hours
From: Credit 1 to 4.
To: Credit 0 to 4.

UGST 484. Internship.

Variable credit hours
From: Credit 1 to 3.
To: Credit 0 to 3.
UGST 485. Directed Studies.

Variable credit hours
   From: Credit 1 to 4.
   To: Credit 0 to 4.

UGST 491. Research.

Variable credit hours
   From: Credit 1 to 4.
   To: Credit 0 to 4.

UGST 492. Cooperative Education in Public Policy.

Variable credit hours
   From: Credit 1 to 3.
   To: Credit 0 to 3.

VIBS 422. Endocrine Toxicology.

Lecture contact hours and semester credit hours
   From: (3-0). Credit 3.
   To: (4-0). Credit 4.

VIST 170. Introduction to Visualization Computing Environments.

Prerequisite
   From: Visualization majors only.
   To: Visualization majors only or approval of instructor.

VIST 201. Writing for Design.

Course description and prerequisites
   From: Writing as a design tool; emphasis on expanding the focus of the design studio beyond drawing and modeling; formal written analysis of works of art and architecture; writing and the design process, from concept development to final presentations. Prerequisite: Concurrent enrollment in VIST 205.
   To: Writing as a discipline for the development, conceptualization, critique and presentation of visual works; emphasis on portfolio and narrative development. Prerequisite: Major in visualization.

VIST 205. Principles of Design III.

Course description and prerequisites
   From: Introduction of design concepts and processes related to three dimensional form, space and order; the relationship of anthropometrics and ergonomics to scale, human form and experience; conceptual notions and visual properties of form, materials, structure, lighting and environment; principles of spatial organization and movement through space. Prerequisites: ARTS 115; VIST 106; concurrent enrollment in VIST 201.*
To: Introduction to the creative processes, workflows and methodologies used in the field of visualization including graphic design, interactivity and animation. Prerequisites: ARTS 115; VIST 106; VIST 170.

VIST 270. Computing for Visualization I.

Prerequisite
From: MATH 151.
To: MATH 151; VIST 170.

VIST 284. Visualization Techniques.

Prerequisite
From: Major in visualization.
To: Major in visualization or minor in art.

VIST 370. Interactive Virtual Environments.

Prerequisite
From: Visualization majors; junior or senior classification.
To: Visualization majors; junior or senior classification; VIST 271.

VIST 372. Creating Digital Environments.

Prerequisite
From: Visualization majors; junior or senior classification.
To: Visualization majors; junior or senior classification; VIST 271.

VIST 465. Art, Culture and Time Based Media.

Prerequisites
From: Junior or senior classification or approval of instructor; non-visualization majors only.
To: Junior or senior classification or approval of instructor.

VIST 470. Digital Rendering.

Prerequisite
From: Visualization majors; junior or senior classification.
To: Visualization majors; junior or senior classification; VIST 271.

VIST 487. Game Development.

Prerequisite
From: VIST 486 or CSCE 441 or approval of instructor.
To: VIST 486 or CSCE 441 or approval of instructor; junior or senior classification.

VIST 494. Internship.

Course description
From: Practical experience in a visualization related company; 15-week internship with a minimum of 600 hours continuous employment; departmental pre-approval through the
departmental internship coordinator required; post evaluation conducted following the internship. May not be repeated for credit.

To: Practical experience in a visualization related company; equivalent of 600 hours over at least 15 weeks; departmental pre-approval through the departmental internship coordinator required; post evaluation conducted following the internship. May not be repeated for credit.

Variable Credit Change (to include zero credit)

College of Liberal Arts
Departments of Anthropology, Communication, Economics, English, Hispanic Studies, International Studies, Performance Studies, Philosophy and Humanities, Political Science, Psychology and Sociology
See Attachment.

5. Change in Curricula

College of Agriculture and Life Sciences
Department of Biological and Agricultural Engineering
BS in Agricultural Systems Management
BS in Biological and Agricultural Engineering

Department of Plant Pathology and Microbiology
Minor in Bioenvironmental Sciences

Department of Recreation, Park and Tourism Sciences
BS in Recreation, Park and Tourism Sciences

College of Architecture
Department of Landscape Architecture and Urban Planning
BLA in Landscape Architecture

Department of Visualization
Minor in Art

Mays Business School
Department of Finance
Certificate in Investment Banking

Department of Information and Operations Management
BBA in Management Information Systems
BBA in Supply Chain Management

College of Education and Human Development
Department of Teaching, Learning and Culture
Minor in Applied Learning in STEM

Dwight Look College of Engineering
Department of Aerospace Engineering
BS in Aerospace Engineering
Department of Biomedical Engineering
   BS in Biomedical Engineering

Zachry Department of Civil Engineering
   BS in Civil Engineering
      Coastal and Ocean Engineering Track
      Construction Engineering and Management Track
      Environmental Engineering Track
      General Civil Engineering Track
      Geotechnical Engineering Track
      Structural Engineering Track
      Transportation Engineering Track
      Water Resources Engineering Track
   BS in Ocean Engineering

Department of Computer Science and Engineering
   BS in Computer Engineering - Computer Science Track

Department of Electrical and Computer Engineering
   BS in Computer Engineering - Electrical Engineering Track
   BS in Electrical Engineering

Department of Engineering Technology and Industrial Distribution
   BS in Electronic Systems Engineering Technology
   BS in Engineering Technology
      Manufacturing and Mechanical Engineering Technology Option
   BS in Industrial Distribution

Department of Mechanical Engineering
   BS in Mechanical Engineering

Harold Vance Department of Petroleum Engineering
   BS in Petroleum Engineering

   BS in Chemical Engineering
   BS in Industrial Engineering
   BS in Nuclear Engineering
   BS in Radiological Health Engineering

**College of Geosciences**
   BS in Environmental Geoscience
   BS in Environmental Studies

Department of Geography
   BS in Geographic Information Science and Technology
      Computation, Design and Analysis (CDA) Track
      Earth Systems Analysis (ESA) Track
      Human Systems and Society (HSS) Track

   Minor in Geographic Information Science and Technology
Department of Oceanography
  Minor in Oceanography

College of Liberal Arts
  Department of Anthropology
  Minor in Anthropology

Department of Economics
  BS in Economics and MS in Economics - 3+2 Program

Department of International Studies
  BA in Classics
    Classical Civilization Track
    Language and Literature Track

Department of Sociology
  Certificate in Gender
  Certificate in Race and Ethnicity

College of Science
  Department of Mathematics
    BA in Mathematics
    BA in Mathematics - 5 Year Fast Track

    BS in Applied Mathematical Sciences
      Actuarial Science Track
      Biological Science Track
      Computational Science Track
      Economics Track
      Statistics Track
      5 Year Fast Track

    BS in Mathematics
    BS in Mathematics - 5 Year Fast Track

6. Texas A&M University at Galveston

  a. New Courses

    MARE 431. Subsea Technology. (3-0). Credit 3. Theory, concepts and practices of subsea projects and operation in the offshore oil and gas industry; field development, drilling, architecture, installation, intervention, mooring systems, operations, flow assurance, chemistry, material, classification, economics and risk management. Prerequisite: Junior or senior classification of approval of instructor.

    MARE 434. Offshore Energy, Oil and Gas Production. (3-0). Credit 3. Orientation to the offshore oil and gas industry; petroleum exploration, production and marketing; platform and floating production facilities; operations; classification of production systems; economics and risk management. Prerequisite: Junior or senior classification or approval of instructor.
MARR 101. Marine Engineering Fundamentals. (1-3). Credit 2. Basic marine engineering systems with emphasis on propulsion plants; propulsion plant machinery, watchstanding organization and duties, shipboard safety practices and equipment.

MARR 102. Engine Room Resource Management and Dynamics. (0-2). Credit 1. Marine engineering watchstanding and operations, safety and security, effective resource management and control or engine room equipment, leadership and managerial skills. Prerequisite: MARR 101.

MARR 207. Electrical Power I. (2-3). Credit 3. Application of circuit analysis principles to DC and AC circuits having sources and passive inductors, resistors and capacitors; shipboard electrical instrumentation; power and voltage/current phase relationships in AC circuits; balanced three-phase AC power circuits, shipboard cable sizing. Prerequisites: MATH 151; PHYS 208.


MARR 306. Electrical Power II. (2-3). Credit 3. Electrical power generation and distribution; AC and DC rotating machinery; transformers; controllers and safety devices; shipboard operation, maintenance and repair procedures and practices; static converters AC/DC and DC/AC used in shipboard electric propulsion plants. Prerequisites: MARE 207; junior or senior classification or approval of instructor.

MARR 307. Marine Electronics. (2-3). Credit 3. Theory of electronic circuits; fundamentals and basic concepts of semiconductors, solid-state components, power supplies, amplifiers, inverters, rectifiers, oscillators and digital and analog integrated circuits; applications in shipboard automation, motor controllers, battery charging systems, communications and marine propulsion plant monitoring systems. Prerequisites: MARR 207; junior or senior classification or approval of instructor.

MARR 312. Marine Diesel Engines. (2-3). Credit 3. Comprehensive study of shipboard diesel engines; thermodynamics of air standard cycles; actual compression ignition engine cycles; emissions and emission controls; fuel injection and turbocharging systems; shipboard engine material properties; operational parameters including forces and temperatures resulting from combustion and inertial dynamics; laboratory includes computer-aided parametric analysis of engine performance and use of a low speed marine diesel propulsion plant simulator. Prerequisites: MARR 305; MARE 313; junior or senior classification or approval of instructor.

MARR 402. Shipboard Automation and Control. (3-0). Credit 3. Study of automation in marine power plants including electronic and pneumatic proportional, integral and derivative control elements; applications in boiler combustion and water level control, engine speed control and remote sensing and performance monitoring systems on seagoing vessels. Prerequisites: MARR 307; MARE 311; MARR 312; junior or senior classification or approval of instructor.

MARR 451. Senior Capstone Project I. (1-3). Credit 2. Design, modeling, testing and validation processes; design of equipment, components or systems for seagoing vessels; use of design manuals, material/equipment specifications and industry regulations applicable to marine engineering technology. Prerequisites: MARE 206; MARE 242; MARE 309; MARE 313; MARR 306; MARR 311; MARR 312; PHYS 208; senior classification.
MARR 452. Senior Capstone Project II. (1-3). Credit 2. Continuation of MARR 451; implementation of ship-related project initiated and developed therein, which may include development of theoretical, computational or experimental models and/or formulation, construction and fabrication work; refining, experimenting and testing of models considering alternatives; analyzing results and preparing and submitting design documents including a project report. Prerequisite: MARR 451.

b. Change in Courses

MARB 401. Physiological Ecology of Marine Mammals.

Lab contact hours and semester credit hours
From: (3-3). Credit 4.
To: (3-0). Credit 3.

MARE 100. Marine Engineering Fundamentals.

Course description
From: A study of basic marine engineering systems, with emphasis on propulsion plants. Introduction to propulsion plant machinery, watchstanding organization and duties, shipboard safety practices and equipment.
To: Basic marine engineering systems with emphasis on propulsion plants; introduction to propulsion plant machinery and shipboard safety practices and equipment; offshore oil production; subsea technologies; petroleum product transport and refinery.

MARE 311. Steam Propulsion Plants.

Course number
From: MARE 311.
To: MARE 211.

Course description
From: Comprehensive study of fossil fuel steam generators, propulsion turbines and condensers, reduction gears, line shafting. Studies include internal fittings and fluid flow paths, automatic controls; regulatory requirements for safety device settings, and system tests and inspections. Additional topics include boiler water-feed water test and treatment, and turbine/reduction gear lubrication. Laboratory includes computer-aided heat balance and parametric analysis of plant performance.
To: Fossil fuel steam generators, propulsion turbines and condensers, reduction gears, line shafting, internal fittings and fluid flow paths, automatic controls, regulatory requirements for safety device settings, system tests and inspections, boiler water/feed water test and treatment, turbine/reduction gear lubrication, computer-aided heat balances, parametric analysis of plant performance.


Prerequisites
From: MARE 205, MARE 303. MARE 309 or concurrent enrollment.
To: MARE 202, MARE 205, MARE 309 or concurrent enrollment, and approval of instructor.


Course prefix
From: MARE 401.
To: MARR 401.

MASE 100. Introduction to Offshore & Coastal Engineering.

Prerequisites
From: MATH 151 or registration therein.
To: MATH 151 or registration therein; only freshman and sophomore classification allowed to enroll.


Course number
From: MASE 301.
To: MASE 463.

Prerequisites
From: Junior or senior classification or approval of instructor, MASE 261, MASE 363, CVEN 345, OCEN 300 or concurrent registration, enrollment in OCSE major degree sequence.
To: Junior or senior classification or approval of instructor, MASE 261, MASE 363, CVEN 345, OCEN 300, enrollment in OCSE major degree sequence.

MASE 406. Capstone Design I.

Prerequisites
From: Students must have successfully completed all required 300-level engineering and technology courses and be in their final academic year prior to graduation. Enrollment in OCSE major degree sequence.
To: Prior completion or co-enrollment in MASE 463, MASE 415 and MASE 405; successful completion of ENGL 210, all required 300-level engineering and technology courses; enrollment in OCSE major degree sequence.

MASE 407. Capstone Design II.

Prerequisites
From: ENGL 301, MASE 406. Enrollment in OCSE major degree sequence.
To: MASE 406; enrollment in OCSE major degree sequence.

MASE 415. Offshore Structure Design.

Prerequisites
From: MASE 301. Junior or senior classification or approval of instructor. Enrollment in OCSE major degree sequence.
To: MASE 463 or concurrent enrollment; MASE 265, CVEN 446 and OCEAN 300; junior or senior classification or approval of instructor; enrollment in OCSE major degree sequence.

MAST 110. SCUBA I Lecture.

Course description and prerequisites

From: Scuba I is entry level SCUBA training course. Upon successful completion of this course and the corresponding laboratory class, the student will have the basic academic knowledge and skills development needed to safely conduct Scuba dives. The student will also have acquired the First Aid/CPR skills necessary to provide basic life support in the event of an emergency. Prerequisite: Must complete a medical statement showing no contraindications to diving, or have a recreational Scuba diver's physical examination.

To: Fundamentals and basic academic knowledge of safe SCUBA diving practices and theory; introduction to diving tables and diving physiology. Prerequisite: Coenrollment in KINE 199 (SCUBA I Lab); must complete a medical statement showing no contraindications to diving, or have a recreational Scuba diver's physical examination.

MAST 120. SCUBA II Lecture.

Course description and prerequisites

From: Scuba II is the second course in the hierarchy of scuba training. The lecture and laboratory course objectives are to promote safe, self-reliant diving and to improve the diver's comfort, coordination, and strength in the water; to increase the diver proficiency and confidence through introductory training in a variety of practical topics; to build competency in dive planning and organization; to understand basic diver stress management and recognition; to be trained in basic surface and underwater dive rescue and lifesaving skills. Prerequisite: Must complete a medical statement showing no contraindications to diving, or have a recreational SCUBA diver's physical examination; coenrollment in KINE 199 (Scuba II Lab) and MAST 120 (Scuba II Lecture), NAUI Scuba Diver certification or equivalent.

To: Methods to promote safe, self-reliant diving and to improve the driver's comfort, coordination and strength in the water; to increase diver proficiency and confidence through introductory training in a variety of practical topics; to build competency in dive planning and organization. Prerequisite: coenrollment in KINE 199 (Scuba II Lab) NAUI Scuba Diver certification or equivalent; must complete a medical statement showing no contraindications to diving, or have a recreational SCUBA diver's physical examination; DAN diving insurance or equivalent.

MAST 321. Industrial Diving Orientation.

Course number

From: MAST 321.
To: MAST 331.

Course title

From: Industrial Diving Orientation.
To: Alternate Diving Technology.

Course description
From: Illustrates the realities of operating in the scientific, commercial and military diving disciplines; practice real world training scenarios involving multiple aspects of each of the three fields.
To: Illustrates the realities of operating in the scientific, public safety and military diving disciplines; practice real world training scenarios involving multiple aspects of each of the three fields.

MAST 352. Traditional Maritime Tools.

Course title
From: Traditional Maritime Tools.
To: Maritime Craftsmanship.

Course description
From: Examine and use traditional 17th-19th century shipbuilding and carpentry tools; experience through practical use the function and capabilities of tools used to build wooden historic sailing vessels; complete at least two individual projects and two group projects to develop and test skills learned in class.
To: Exploration of various crafts, skills and aesthetic/design used in and supporting the maritime world; hands-on activities and practical experience of various skills and processes, using traditional tools required to put a ship to sea; from carpentry to rope-making, sewing canvas sails to making blocks.

Variable Credit Change (to include zero credit)

Texas A&M University at Galveston
Departments of Marine Biology, Marine Engineering Technology, Marine Science, Marine Transportation, Maritime Administration, Maritime Systems Engineering, Maritime Studies.
See Attachment.

c. Change in Curricula

Texas A&M University at Galveston
Department of General Academics
Minor in Diving Technology and Methods

Department of Marine Engineering Technology
BS in Marine Engineering Technology
BS in Marine Engineering Technology - License Option

Department of Marine Systems Engineering
BS in Offshore and Coastal Systems Engineering

d. Information Only

Texas A&M University at Galveston
Request to add ANTH 330 to Galveston’s course inventory
Request to add ENGL 484 to Galveston’s course inventory
Request to add GEOL 101 to Galveston’s course inventory
Request to add GEOL 106 to Galveston’s course inventory

7. Special Consideration

**College of Architecture**
Diversity Certificate Program
Request for a new certificate program between the
College of Architecture and the Department of Multicultural Services

**Mays Business School**
BS in Agribusiness
Request to discontinue the program in Mays Business School (BS-AGBU-BA)

**College of Liberal Arts**
Minor in Liberal Arts Honors
Request for a new minor

Department of Economics
Certificate in Business Economics
Request for a new certificate program

Certificate in Quantitative Economics Methods
Request for a new certificate program

**College of Veterinary Medicine and Biomedical Sciences**
Department of Veterinary Physiology and Pharmacology
Certificate in Biomedical Research and Development
Request for a new certificate program

**Office of Undergraduate Studies**
South Texas College of Law
Early Admission Program
Request to terminate program

8. Change in Curricula – From November 2014

**College of Education and Human Development**
Department of Educational Administration and Human Resource Development
BS in Human Resource Development

Minor in Human Resource Development

9. Tabled Items

**New Course**

WFSC 404 – committee requested updated learning outcomes. Once the updates are received, send to committee for e-vote.
10. Other Business

J. Jasperson submitted revisions to the student rule 7 example on the UCC/GC Course Submission Checklist and requested the checklist be updated.

Committee agreed to handle the submission of zero credit hour changes as an informational item. An example memo request was distributed to committee members. Requests to change existing variable credit hour courses to include zero credit hours must be sent to S. Williams by January 14th in order to meet the February Faculty Senate meeting.

B. Knight inquired how zero credit hours would affect degree evaluations.
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.

6. Cross-listed with:
Stacked with:
Cross-listed courses require the signature of both department heads.

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

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

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://vpr.tamu.edu/resources/export-controls/export-controls-basics-for-distance-education).

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

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Approval recommended by:
R. Duane Ireland  3/27/15

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

Nancy Simpson  3/27/15
Chair, College Review Committee

Martha Loudder  3/27/15
Dean of College

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

Associate Director, Curricular Services  Effective Date

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](http://ecampus.tamu.edu)

Startup Aggieland Website: [http://startupaggieland.tamu.edu](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) **Recognize** potential business opportunities and identify the resources required 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.
MGMT 261 – Spring 2015

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 are to be developed, 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 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/
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<th>Date</th>
<th>In Class Lectures and Activities</th>
<th>Assignments</th>
<th>Deadlines</th>
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</table>
| Week 1 1/19| **MLK - Holiday**  
**Introduction to course**  
- Discuss Assignments and Grades  
- What is Startup Aggieland/What I want you to know!  
- Facebook page/Expectations for Class/Canned food drive  
- Roll call  
- Historical Perspective  
- Discuss Personal profile/Resumes/Useful Website assignments  
- Look up Incubator vs. Accelerator | **Overview of Semester Assignments**  
**4 Individual Assignments (1-4):**  
1. Personal profile  
2. Define Incubator/Accelerator  
3. Useful Website Assignment  
4. Resume  
5. State-of-the-Group Report  
6. Final Peer Review  
7. Final Press Release due  
8. Reflection Journal and Summary | **Note:** assignment descriptions are listed on e-learning:  
http://ecampus.tamu.edu  
**Assignments turned into e-learning should be attached as Word documents; do NOT paste into e-learning.** |
| Week 2 1/26| **Team Building – Meet at Hullabaloo Hall**  
**E-Society Presentation/E-Campus demonstration,**  
- Discuss Personal Profile assignment  
- Introduce Useful Website Assignment  
- Discuss Group Activities  
- Name tags created, pictures taken, Bingo Exercise  
- Form Groups/Group introductions  
- Fun Exercise  
- Meet Mentors /Select Group Activities | **2 Group Assignments:**  
A. Interview an Entrepreneur  
B. Group Activity Choice | **1. Personal Profile due by class time. See E-Campus.**  
**2. All students look up definition of Incubator/Accelerator definition** |
<p>| Week 3 2/2 | <strong>Strength’s Test</strong>                                                                             |                                                                                                  | <strong>3. Useful Website Assignment due by class time. Turn in hard copy at beginning of class.</strong> |
| Week 4 2/9 | <strong>Retreat @ Mr. Don Lewis’ Barn</strong>                                                               |                                                                                                  | <strong>4. Resume Upload a copy of your resume to E-learning</strong>                   |
| Week 5 2/16| <strong>NO CLASS</strong>                                                                                     |                                                                                                  |                                                                         |
| Week 6 2/23| <strong>Vote &amp; First Friday in Downtown Bryan</strong>                                                        |                                                                                                  |                                                                         |
|           | <strong>Etiquette Dinner</strong>                                                                            |                                                                                                  |                                                                         |</p>
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| 9    | 3/16 | SPRING BREAK  
$10 Business Idea  
Football Game @ Kyle Field  
TEEX Visit  
$10 Business Idea Follow-up  
Startup Aggieland Interviews on Campus  
Interview Follow-up  
Jacket Fittings  
Photos  
LinkedIn & Follow-up  
REDEFINED DAY (students go to Friday classes)  
Final -TBD  
- Tying it all together Class Wrap Up and Planning for future  
A. Interview an Entrepreneur  
Final Peer Review  
Final Press Release due  
Reflection Journal and Summary |
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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
   - ✔ 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 (CLAD)

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)

12. □ I verify that I have reviewed the FAQ for Export Control Basics for Distance Education (http://vpr.tamu.edu/resources/export-control/export-controls-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) 2-2-16
- Date

Nancy Simpson
- Chair, College Review Committee
- Date

Martha Loudder
- Dean of College
- Date

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

Associate Director, Curricular Services
- Effective Date

Questions regarding this form should be directed to Sandra Williams at 945-8201 or sandra.williams@tamu.edu.
Curricular Services – 07/14

[Stamp: RECEIVED MAR 30 2015]
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://startupaggioeland.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. Understanding and applying successful strategies for group collaboration
   - Best practices in group communication
   - Leadership styles and effectiveness
5. 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
MGMT 477 – Spring 2015
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

NOTE: Grading will be based upon a team member’s ability to demonstrably go through the process and journey of customer and market validation. A failed business idea will not necessarily result in a low grade, and may in fact receive high marks

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](http://student-rules.tamu.edu/rule07). The fact that these are university-excused absences does not relieve the student of responsibility for prior notification 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/](http://aggiehonor.tamu.edu/)

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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

(All Weeks)

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.
MGMT 477 – Spring 2015
Class Calendar

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 (JD, MD, PhD, 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

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)
    STAT  182  FOUNDATIONS OF STATISTICS

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Approval recommended by:

Valen Johnson  Date

Department Head or Program Chair (Type Name & Sign)

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:

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

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 understand 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.
Idea 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.

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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
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):

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<th>Cross-listed courses require the signature of both department heads.</th>
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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 (CLSEM)
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-
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Approval recommended by:

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

Chair, College Review Committee  3/9/15
Date

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

Dean of College  3/9/15
Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services  Date

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

RECEIVED  MAR 12 2015
CURRICULAR SERVICES
STAT 404 – Statistical Computing  
Spring 2017, Texas A&M University

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. understand basic methods in statistical computing, including sampling, random number generation, and parallel computing for big data.
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:

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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

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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 (DO, 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 406. 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

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.

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)

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13. Prefix: STAT  
Course #: 406  
Title (excluding punctuation): DESIGN EXPER ANALY VARIANCE

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</tr>
</tbody>
</table>

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

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 845-8201 or sandra.williams@tamu.edu
Curricular Services – 07/14
# STATISTICS 406 – Design and Analysis of Experiments

**Spring 2017, Texas A&M University**

**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

<table>
<thead>
<tr>
<th>Time and Place:</th>
<th>Lectures: TBD</th>
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</thead>
<tbody>
<tr>
<td>Instructor:</td>
<td>TBD</td>
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<td>Office:</td>
<td>TBD</td>
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<td>E-mail:</td>
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<tr>
<td>Office Hours:</td>
<td>TBD</td>
</tr>
<tr>
<td>Grader:</td>
<td>TBD</td>
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<tr>
<td>Class Web Pages:</td>
<td>ecampus.tamu.edu</td>
</tr>
<tr>
<td>Prerequisite:</td>
<td>STAT 212; STAT 408.</td>
</tr>
<tr>
<td>Computing:</td>
<td>The SAS and R statistical programming software.</td>
</tr>
<tr>
<td>Homework:</td>
<td>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.</td>
</tr>
<tr>
<td>Exams:</td>
<td>There will be two midterm exams worth 25% each and a final exam worth 35%. <em>Please see the exam policy below.</em></td>
</tr>
<tr>
<td>Exam Dates:</td>
<td>Midterm Exam: TBD</td>
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<tr>
<td></td>
<td>Final Exam: TBD</td>
</tr>
<tr>
<td>Grading scale:</td>
<td>A: 90%–100%; B: 80%–89%; C: 70%–79%; D: 60%–69%; F: 0%–59%</td>
</tr>
</tbody>
</table>
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. Recognize 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

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)
**Course Policies**

**Homework Policy:** Homework assignments will be available under **Homework Assignments** 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
   E. 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
   F. Addition of center points in $2^c$ 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
   B. 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, DPT)

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


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.

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 (CI) or CIU

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) |
-----------|----------|-----------------------------|
STAT      | 426      | METHODS TIME SERIES ANALYSIS |

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<th>Lect.</th>
<th>Lab</th>
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<th>Admin. Unit</th>
<th>Acad. Year</th>
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</tbody>
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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

Department Head or Program Chair (Type Name & Sign) 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
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. recognize 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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<th>Percentage</th>
<th>Component</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td>20%</td>
<td>Homework</td>
<td>A</td>
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<tr>
<td>25%</td>
<td>Midterm1</td>
<td>B</td>
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<tr>
<td>25%</td>
<td>Midterm2</td>
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<td>Final Exam</td>
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</table>

| 90-100%    |
| 80-89%     |
| 70-79%     |
| 60-69%     |
| 0-59%      |

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.
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- 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 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:
- 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


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? ☑ No  If yes, from ________ to ________

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

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. 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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<th>STAT</th>
<th>436</th>
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<td>Other</td>
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</table>

Approval recommended by:

Valen Johnson  3/10/15

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 845-2001 or swilliams@tamu.edu.

Curricular Services – 07/14
STAT 436 – Multivariate Analysis & Statistical Learning
Fall 2016, Texas A&M University

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:

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<tr>
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Attendance:
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Homework:
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Exams:
• There will be one midterm exam and a final exam.
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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

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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

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

   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  438  Bayesian Statistics

   Lect.  Lab  Other  SUI  CIP and Fund Code  Admin. Unit  Acad. Year  FICE Code
   3.00  0.00  0.00  3.00  2705010001  2740  16 - 17  [0 0 3 6 3 2]  Level  4

   Approval recommended by:

   Valen Johnson
   Department Head or Program Chair (Type Name & Sign)  Date  3/9/15

   Chair, College Review Committee  Date  3-9-15

   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:  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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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: 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)

3
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

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) STAT 445 Applied Biostatistics Data Analysis

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Approval recommended by:

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

Chair, College Review Committee Date

3-9-15

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

Dean of College Date

3-9-15

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.williams@tamu.edu.

Curricular Services – 07/14

RECEIVED CURRICULAR SERVICES

MAR 12 2015
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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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

**STATEMENT ON DISABILITIES:**
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([http://aggiehonor.tamu.edu](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

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

4. Catalog course description (not to exceed 30 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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Level 4

Approved by:

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

Chair, College Review Committee  Date

3-9-15

Dean of College  Date

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: 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:

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Attendance:
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Homework:
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- 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.
   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.tamun.edu/resources/export-controls/export-controls-basics-for-distance-education).

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

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:

Chair, GC or UCC Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu
Curricular Services – 07/14
STAT 459 – Categorical Data Analysis  
Spring 2017, Texas A&M University

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:

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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](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](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.

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
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)
    STAT | 482 | Statistics Capstone

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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) Date
(if cross-listed course)
Dean of College 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 sandra.williams@tamu.edu
Curricular Services – 07/14
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:
- Required software: R or SAS.

Grades:

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<th>Percentage</th>
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<tr>
<td>20%</td>
<td>Journal Entries</td>
<td>A</td>
</tr>
<tr>
<td>50%</td>
<td>Short Writing Assignments</td>
<td>B</td>
</tr>
<tr>
<td>30%</td>
<td>Final Project</td>
<td>C</td>
</tr>
</tbody>
</table>

A 90-100%
B 80-89%
C 70-79%
D 60-69%
F 0-59%

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](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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WITHDRAWAL OF COURSES
Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
• Submit original form and attachments •

Form Instructions

1. Course request type: ☑ Undergraduate □ Graduate □ First Professional (DDS, MD, JD, PharmD, DVM)
2. Request submitted by (Department or Program Name): Educational Psychology
3. Course prefix, number and complete title of course: EDTC 311 Adaptive/Assistive Technology

4. Change requested
   a. Prerequisite(s): From: To:
   b. Withdrawal (reason): Course will no longer be taught.
   c. Cross-list with: Cross-listed courses require the signature of both department heads.
   d. Change in course title and description. Enter complete current course title and current course description in item 9; enter proposed course title and proposed course description in item 10. Complete item 11a and b for a change in title.
   e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 11a and b. Attach a course syllabus.

5. Is this an existing core curriculum course? ☑ Yes □ No
6. If grade type is changing for existing course, indicate the new grade type: ☑ Grade □ S/U □ P/F (C, M, D)
7. If this course will be stacked, please indicate the course number of the stacked course:

8. 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).

9. Complete current course title and current catalog course description:

10. Complete proposed course title and proposed catalog course description (not to exceed 50 words):

11. a. As currently in course inventory:

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   Approval recommended by:

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

   Chair, College Review Committee Date

   Dean of College Date

   Chair, GC or UCC Date

   Effective Date

   CURRICULAR SERVICES

   RECEIVED

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services 08/14
B2
Texas A&M University
Departmental Request for a Change in Course
Undergraduate ● Graduate ● Professional
● Submit original form and attachments ●

Form Instructions

1. Course request type:  □ Undergraduate  □ Graduate  □ First Professional (DDS, MD, JD, PharmD, DVM)
2. Request submitted by (Department or Program Name):  Educational Psychology
3. Course prefix, number and complete title of course:  EPSY 428 Collaboration in School Settings

Change requested

a. Prerequisite(s):  From:  To:

b. Withdrawal (reason):  Course will no longer be taught.

c. Cross-list with:

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

d. Change in course title and description. Enter complete current course title and current course description in item 10; enter proposed course title and proposed course description in item 10. Complete item 11a and b for a change in title.

e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 11a and b. Attach a course syllabus.

5. Is this an existing core curriculum course?

6. If grade type is changing for existing course, indicate the new grade type:  □ Yes  □ No  □ S/U  □ P/F (CLMD)

7. If this course will be stacked, please indicate the course number of the stacked course:

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).

9. Complete current course title and current catalog course description:

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Approval recommended by:

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

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

Chair, College Review Committee  Date

Dean of College  Date

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 – 08/14

[Stamp: RECEIVED]
Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
• Submit original form and attachments •

Form Instructions
1. Course request type:  □ Undergraduate  □ Graduate  □ First Professional (DGS, MD, JD, PharmD, DVM)
2. Request submitted by (Department or Program Name):  Educational Psychology
3. Course prefix, number and complete title of course:  SEFB 426 Effective Instruction of Students of Diverse Abilities

Attach a brief supporting statement for changes made to items 4a through 4d, and 10 below.

4. Change requested
   a. Prerequisite(s):  From:  □ To:
   b. Withdrawal (reason):  Course will no longer be taught.
   c. Cross-list with:

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

   d. Change in course title and description. Enter complete current course title and current course description in item 9; enter proposed course title and proposed course description in item 10. Complete item 11a and b for a change in title.

   e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 11a and b. Attach a course syllabus.

5. Is this an existing core curriculum course?  □ Yes  □ No
6. If grade type is changing for existing course, indicate the new grade type:  □ Grade  □ S/U  □ P/F (CLMD)
7. If this course will be stacked, please indicate the course number of the stacked course:
   □ 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).

8. Complete current course title and current catalog course description:

9. Complete proposed course title and proposed catalog course description (not to exceed 50 words):

10. As currently in course inventory:

   Prefix  Course #  Title (excluding punctuation)
   SEFB  426  EFFECT INSTGR DIVERSE ABL

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   Change to:
   Prefix  Course #  Title (excluding punctuation)

   Lect.  Lab  Other  SCH  CIP and Fund Code  Admin. Unit  Acad. Year  FICE Code  Level

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

   Chair, College Review Committee  Date
   Dean of College  Date
   Chair, GC or UCC  Date
   Submitted to Coordinating Board by:
   Associate Director, Curricular Services  Date

Questions regarding this form should be directed to Sandra Williams at 845-8231 or sandra.williams@curricularservices.tamu.edu
CHANGE IN COURSES
Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
• Submit original form and attachments •

Form Instructions

1. Course request type:  
   - [ ] Undergraduate  
   - [ ] Graduate  
   - [ ] First Professional (MED, JD, PharmD, DVM)

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

3. Course prefix, number and complete title of course:  
   GEOG 201 Introduction to Human Geography

4. Change requested
   a. Prerequisite(s):  
      From:  
      To:  
   b. Withdrawal (reason):  

5. Is this an existing core curriculum course?  
   - [X] Yes  
   - [ ] No

6. If grade type is changing for existing course, indicate the new grade type:  
   - [ ] Grade  
   - [ ] S/U  
   - [ ] P/F (ICMD)

7. If this course will be stacked, please indicate the course number of the stacked course:
   - [X] 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).

8. Complete current course title and current catalog course description:
   Introduction to Human Geography. A survey of the major systems of man-land relations of the world and their dissimilar developments; the processes of innovation, diffusion and adaptation stressed with regard to changing relationships between people and their environment.

9. Complete proposed course title and proposed catalog course description (not to exceed 50 words):
   No change requested

10. Approval recommended by:
    David M. Cairns, Dept. Head
    Chair, College Review Committee
    Chair of College
    Chair, AOC Dean
    Chair, GC or UCC
    Date
    Date

11. a. As currently in course inventory:

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Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu
Curricular Services – 08/14
TO: University Curriculum Committee
FROM: Dr. David Cairns, Head
Department of Geography
DATE: 19 November 2014
SUBJECT: Proposal for a Change in Course – Geography 201

The Department of Geography proposes to make a minor change to the core curriculum course Geography 201 by adding 1.0 lab to the course inventory. This change is justified by the curricular changes required for the core course assessment. In addition, the course utilizes online lab exercises and homework that would account for the 1.0 lab requirement.
COURSE DESCRIPTION
This course introduces students to the broad concerns of human geography. The intention is to understand how places throughout the world are interrelated politically, socially, and economically. We begin with a discussion of human population, with an emphasis on concepts, migration, and population policy debates. Lectures and readings on economic geography stress uneven global patterns of industrialization, manufacturing, and regional development. We examine how human societies relate to the natural environment, stressing the impacts of people on vegetation, the atmosphere, and land surfaces over space and time. We turn to the countryside and examine agricultural revolutions, types of agriculture across the globe, and the different forms and challenges of global food production. We also explore how culture—norms, values and belief systems—has a geographical expression, shapes landscapes, and changes over time and through space. We also consider political geography by distinguishing between states and nations, and then stressing geopolitics and imperialism as ways of understanding political conflict. Finally, we then explore several aspects of cities, including urbanization process and urban space, with special attention to cities in the peripheries and urban environmental problems.

LEARNING OBJECTIVES
The student will be able to achieve the following learning objectives in this course

- Define fundamental terms and key concepts in human geography.
- Locate the major settlement patterns, economic regions, and cultural divisions across the globe and explain how they developed geographically.
- Identify demographic changes and how they alter economic and political development across the globe.
- Apply concepts in geographical information science and technology to problems of human geography.
- Identify major processes that create political and cultural difference and how they shape regional conflicts and environmental change.
- Identify how cultural practices and belief systems shape the landscape.
- Explain the origins of urban settlements and their relationship to one another and to the countryside.
- Compare and contrast the processes of economic development in different regions.
- Compare and contrast the impact of globalization (economic, cultural and environmental) on the core, periphery and semi-periphery.
REQUIRED MATERIALS

Course Text

Course Technology
- You must bring a mobile device or laptop computer for class participation
- TopHat Subscription (http://tophat.com)

Top Hat Course Response Information:
Course SMS Response Number: +1 (315) 636-0905
Course URL: tophat.com/e/XXXX
Course Code: XXX

EVALUATION
Midterm – 30%
Homework – (7) – 30%
Presentation – 5% (Core Curriculum Requirement)
Final exam – 30%
Participation – 5% (via TopHat) → (attendance)

Exams
You will be required to take two exams. You will only need your pencil and gray scantron sheet, nothing else. Please follow the exam rules (to be announced in class). If you are late for the exam, you will have to wait at the front of the lecture hall until all the seated students have begun the exam. You will then be seated and provided an exam; you will also be the first to turn in your exam at the end of the period.

Assignments
These activities are designed to help you understand the concepts discussed in lecture and provide you with some hands-on examples of the applicability of human geography in a variety of fields of enquiry. Each assignment is due on the date (by 5:30pm) listed in the Course Schedule. You may work ahead on your own, but I will not accept late assignments unless you have an excused absence. You are required to read all the material associated with the assignments. This material will also be on your exams.

You are not to work in groups on the assignments. The assignments are intended to be an evaluation of your individual work. All suspected cases of plagiarism will be sent to the Honors Council. Please be aware the software and online programs have mechanisms to monitor your work.

The assignments will be either delivered via MasteringGeography or our in-house server. Details will be provided in class as to how to access the assignments.
Presentation
You must work up a Powerpoint presentation and deliver it to via eCampus. Your presentation must focus on TWO maps (the visual part of the requirement). The maps must be representations of at least ONE of the four topics below (the main course topics—these interact, so they are not necessarily mutually exclusive):

• Global Shifts in Demographics
• Global Climate Change
• Global Resource Supplies (eg., Energy, Water, Land, Forests)
• Global Geopolitics

You must write several Powerpoint text slides (three to four for each map) to evaluate your critical thinking, social and personal responsibility (see above for definitions). You may make or download maps. The only restriction is that you may NOT use maps from either my Powerpoint slides for the course or any illustrations from the text. When you use web resources be cautious about where they come from. Part of “critical thinking” is evaluation of how reliable a source of information is likely to be.

To go about your assignment ask yourself the following questions. Please note that there are no “right” or “wrong” answers here.

1. How do consumption patterns in wealthy versus poor countries impact such things as demographics, global climate change, competition for resources, and geopolitics at an international scale?

2. In any debate over demographic behaviors, climate change policies, resource utilization, or geopolitical conflict there are multiple “sides.” Identify at least some of the most important of these and tell us where you stand on this and why?

Participation
You are required to attend lecture. My lectures are based on the chapters, and I will assume you have read the assigned material. If you know that you will be late or have to leave lecture early, please sit by the doors so that your exit does not disturb your colleagues.

Using Top Hat, I will take attendance and provide in-class real time response to questions; you will earn points through participation and attendance. Your participation grade will be the percentage of the attendance and possible points earned during class. For example, if I ran TcpHap in 20 class meetings (attendance and questions) and you have documented full participation/attendance in 15 meetings, you will earn a grade of 75%. If you have documented full participation in all 20 meetings, you will earn 100%. This is the percentage that will be weighted in the final grade (FYI – it weighted the same as one full homework assignment, 5%).

Grading Scale: A for 100-90%; B 89-80%; C 79-65%; D 64-55%; F below 55%. The distribution of grades may be adjusted to class performance. Please note that the various assignments are weighted so take that into account when you try to calculate your performance during the semester.
CLASSROOM POLICIES

Scholastic dishonesty
The Aggie Code of Honor is simple: “Aggies do not lie, cheat, or steal, nor do they tolerate those who do.” Instances of scholastic dishonesty will be treated in accordance with Section 20 of the TAMU Student Rules. Please inform yourself on the student rules regarding cheating, plagiarism, fabrication of information, and conspiracy at the new website: http://library.tamu.edu/aggiehonor.

Grade disclosure
All personal information concerning your performance in this course is covered by federal privacy legislation, known as the Family Educational Rights and Privacy Act of 1974 (FERPA). No grades or status questions will be provided by telephone or email.

Communication
I have allotted that time during the week for meeting students. Please come to office hours. If you email me, make sure you title the email “GEOG 201.”

**** If you have missed an assignment or an exam and wish to provide me information regarding an absence, you must make an appointment to meet with me in person. An email notification is not sufficient ****

ADA 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 the Office of Services for Students with Disabilities (SSD) at Cain Hall, room B118. The phone number is 845-1637.

Absences
This class follows University policy regarding excused absences. The rules and regulations regarding religious observances: http://dof.tamu.edu/faculty/policies/religiousobservance.php. If the absence is excused, the instructor must either provide the student an opportunity to make up any quiz, exam or other graded activities or provide a satisfactory alternative to be completed within 30 calendar days from the last day of the absence. For more information, please see Section 7 of the student rules: http://student-rules.tamu.edu

Other Policies

- All course material is copyrighted. These materials include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. This means you are not to distribute the materials to online study sites, services, etc. (eg. studyblue.com, etc.).
# COURSE OUTLINE

<table>
<thead>
<tr>
<th>Date</th>
<th>Week</th>
<th>Topic</th>
<th>Reading</th>
<th>Online Labs and Assignments - Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/20</td>
<td>1A</td>
<td>Introduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/22</td>
<td>1B</td>
<td>Key Concepts</td>
<td></td>
<td>You must be registered with Top Hat</td>
</tr>
<tr>
<td>1/27</td>
<td>2A</td>
<td>Geographers' Toolkit: GIST</td>
<td></td>
<td>You must be registered with MG</td>
</tr>
<tr>
<td>1/27</td>
<td>2B</td>
<td>Globalization</td>
<td>Ch 1</td>
<td></td>
</tr>
<tr>
<td>2/3</td>
<td>3A</td>
<td>Globalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/5</td>
<td>3B</td>
<td>Population Geography</td>
<td>Ch 2</td>
<td></td>
</tr>
<tr>
<td>2/10</td>
<td>4A</td>
<td>Population Geography</td>
<td></td>
<td>Lab 1: “Population Geography” (Pearson)</td>
</tr>
<tr>
<td>2/12</td>
<td>4B</td>
<td>Population Geography</td>
<td>Ch 3</td>
<td></td>
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<tr>
<td>2/17</td>
<td>5A</td>
<td>Economic Geography</td>
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<td>Lab 2: “Economic Geography” (Pearson)</td>
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<td>2/19</td>
<td>5B</td>
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<tr>
<td>2/24</td>
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<td>Lab 2: “Economic Geography” (Pearson)</td>
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<tr>
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<td>6B</td>
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<tr>
<td>3/10</td>
<td>8A</td>
<td>People and Nature</td>
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<tr>
<td>3/12</td>
<td>8B</td>
<td>MIDTERM</td>
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<td>3/17</td>
<td>9A</td>
<td>Spring Break</td>
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<tr>
<td>3/19</td>
<td>9B</td>
<td>Spring Break</td>
<td></td>
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<tr>
<td>3/24</td>
<td>10A</td>
<td>Food and Agriculture</td>
<td>Ch 5</td>
<td>Lab 4: “Urban Agriculture” (GIST)</td>
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<tr>
<td>3/26</td>
<td>10B</td>
<td>Food and Agriculture</td>
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</tr>
<tr>
<td>3/31</td>
<td>11A</td>
<td>Food and Agriculture</td>
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<td>Lab 4: “Urban Agriculture” (GIST)</td>
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<tr>
<td>4/2</td>
<td>11B</td>
<td>Political Geography</td>
<td>Ch 6</td>
<td>Lab 5 “Political Geography” (Pearson)</td>
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<td>12A</td>
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<td>4/9</td>
<td>12B</td>
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<td>Ch 7</td>
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<td>4/21</td>
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<td>Ch 8</td>
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<td></td>
<td>Lab 7: “Urbanization” (Pearson)</td>
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<td>16A</td>
<td>Review Day</td>
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Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional
Submit original form and attachments

Form Instructions

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

2. Request submitted by (Department or Program Name): Educational Psychology

3. Course prefix, number and complete title of course: SPED 314 Effective Mathematics Strategies for Students with Disabilities

4. Change requested
   a. Prerequisite(s): From: ___________________________ To: ___________________________
   b. Withdrawal (reason): ___________________________
   c. Cross-list with: ___________________________

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

5. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 11a and b. Attach a course syllabus.

6. If grade type is changing for existing course, indicate the new grade type: ☐ Grade ☑ S/U ☐ P/F (CLMD)

7. If this course will be stacked, please indicate the course number of the stacked course:
   ☐ 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).

8. Complete current course title and current catalog course description: Effective Mathematics Strategies for Students with Disabilities. (3-0). Credit: 3. Information and competencies through instruction in effective mathematics instruction for students P-12 with academic learning problems and/or disabilities; effective instruction design and teaching techniques, implementation of research-based methods relevant for active authentic learning; considers state and national standards related to teaching and learning mathematics. Prerequisites: Admission to professional phase of program.

9. Complete proposed course title and proposed catalog course description (not to exceed 50 words): Effective Mathematics Strategies for Students with Disabilities. (3-0). Credit: 3. Information and competencies through instruction in effective mathematics instruction for students P-12 with academic learning problems and/or disabilities; effective instruction design and teaching techniques, implementation of research-based methods relevant for active authentic learning; considers state and national standards related to teaching and learning mathematics. Prerequisites: Admission to professional phase of program.

10. Change in course inventory:
   a. As currently in course inventory:
      
      | Prefix | Course # | Title (excluding punctuation) |
      |--------|----------|-------------------------------|
      | SPED   | 314      | EFFEC MATH STR FOR SWD       |
      
      | Lec. | Lab | Other | SCH | CIP and Fund Code | Admin. Unit | FICE Code | Level |
      |------|-----|-------|-----|------------------|-------------|-----------|-------|
      | 3.00 | 0.00|       | 3.00| 1313110002      | 00 3 6 3 2 | B         |

   b. Change to:
      
      | Prefix | Course # | Title (excluding punctuation) |
      |--------|----------|-------------------------------|
      | SPED   | 314      | EFFEC MATH STR FOR SWD       |
      
      | Lec. | Lab | Other | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | FICE Code | Level |
      |------|-----|-------|-----|------------------|-------------|------------|-----------|-------|
      | 4.00 | 0.00|       | 4.00| 1313110002      | 09 3 6 3 2 | 16         |

   Approval recommended by:
   __________________________
   __________________________
   __________________________
   __________________________
   __________________________
   __________________________
   __________________________

   Department Head or Program Chair (Type Name & Sign) Date
   Chair, College Review Committee Date
   Dean of College Date
   Chair, GC or UCC Date
   Effective Date

   Curricular Services – 08/14

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu
SPED 314   Effective Mathematics Strategies for Students with Disabilities

Fall 2015 Course Meeting Details
August 31- December 9
T/R 2:00-3:40
EDCT 614

Instructor
Mr. Corey Peltier, M.Ed.
corey1024@tamu.edu
Office Hours: By Appointment
Harrington 701B

Course Description
Information and competencies through instruction in effective mathematics instruction for students P-12 with academic learning problems and/or disabilities; effective instruction design and teaching techniques; implementation of research-based methods relevant for active authentic learning; considers state and national standards related to teaching and learning mathematics. Prerequisites: Admission to Special Education Program.

Learning Outcomes
By the end of this course, the learner will be able to:
1. Explain the process of the Response to Intervention in mathematics and how to serve students with special needs in a variety of public school settings.
2. Explain how disabilities impact the learning of mathematics.
3. Demonstrate the use of mathematics manipulatives, technology, and other instructional methods for the teaching and learning of K-6 concepts.
4. Create informal assessments to evaluate learners' level of knowledge and concept acquisition; evaluate data from assessments to inform instruction.
5. Design and demonstrate effective lessons in mathematics to reflect NCTM and state standards for K-6 learners to include modifications for those with learning disabilities.
6. Identify and integrate information/resources from key individuals in the field of mathematics who support researched-based teaching methods.

General Course Expectations
You are expected to come to class on time, prepared with readings completed as assigned, and quality and thoughtful assignments submitted on time. All assignments are expected to be submitted in the format as directed for that particular assignment. Late work due to an unexcused absence will be accepted up to the following class period (whether we meet or not) and will earn, at the most, half-credit. Concerns about grades, etc. should be addressed by scheduling an appointment with me via email.

Attendance Policy
Only university approved reasons will be accepted as excused absences (see http://student-rules.tamu.edu/rule07 ). Handle these professionally: email me prior to missed class or as soon as possible, submit applicable documentation at the next class meeting, and submit makeup work according to TAMU policy. You will not be able
Texas A&M University
Departmental Request for a Change in Course
Undergraduate • Graduate • Professional

* Submit original form and attachments *

to make up missed participation points when you have an unexcused absence. You will need to email me for your make-up participation assignment. Any missed class information is your responsibility to obtain.

Required Textbook

Required Supplies
1. (2) 70 page wide-ruled composition notebook with a label in the top right corner containing your name
2. Scissors and glue stick (for interactive notebook assignments)
3. USB Flash Drive (4GB) for your ‘Micro-Teach’ Video
4. Materials for your ‘Micro-Teach’ & Tri-fold Project Board for the Gallery Presentation.

Recommended Textbook

Resources
National Center for Learning Disabilities http://www.ncld.org/
Kahn Academy https://www.khanacademy.org/
Learn Zillion https://learnzillion.com/
Project Share http://www.projectsharetexas.org/
Mathematics Toolkit http://www.utdanacenter.org/mathtoolkit/
National Council of Teachers of Mathematics http://www.nctm.org/

Optional Memberships
1. NCTM - National Council of Teachers of Mathematics http://www.nctm.org/
2. CEC - Council for Exceptional Children http://www.cec.sped.org/
3. TCMT - Texas Council of Teachers of Mathematics http://tctmonline.org/

Professional Behavior Expectations
Professional behavior is an essential skill for educators and crucial for success during both coursework and field work in the Special Education Program. In order to prepare you for your professional career, the Special Education Program faculty expects the following professional behaviors to be displayed: giving maximum effort; actively participating/taking initiative; displaying a respectful attitude in all settings and to all people; using electronic devices appropriately (for the purpose of learning during class, not emailing, texting, surfing, posting, etc.); using effective, appropriate, timely and, courteous communication to your peers, the TAMU faculty, guest speakers, school personnel, and students with whom you work; and ensuring confidentiality. In the event professional behavior is not exhibited, it is at the discretion of the TAMU faculty member how violations are handled. Consequences include but are not limited to redirection, confrontation, Growth/Probation plan, appearing before the Undergraduate Committee, and/or dismissal from the Special Education Program.

Course Requirements

In-class Activities - This course focuses on evidence-based strategies used to help students with challenges and disabilities understand and utilize mathematics. Therefore, there will be many opportunities to practice and demonstrate using those strategies and manipulatives during the semester, as well as engaging in meaningful participation. Productive and professional participation, the interactive notebook, the Gallery Presentation, and the written constructive feedback you give to your peers regarding their Micro-Teach, all fall within this category.
Texas A&M University

Departmental Request for a Change in Course
Undergraduate • Graduate • Professional

Submit original form and attachments

- Interactive Notebook (10%) - You will add information throughout the semester to your interactive notebooks (one for early elementary and one for upper elementary) in the form of notes, foldables, charts, etc. This will be submitted at the end of the semester. More details will be provided in class.
- Gallery Presentation (5%) - Your Tri-fold will be graded in addition to the feedback you provide to your classmates.
- Quick Check (5%) - Each week you will be given a quick check on the math content discussed in class.
- Weekly Text Check (10%) - Each week there will be a brief assessment on the required reading due for that class.
- Weekly Discussion Board (10%) - Each week there will be a brief prompt you must respond to on the discussion board before Tuesday’s class. You will then need to critique a classmates post citing evidence from the book and class in your response before Thursday’s class.
- Micro-Teach (15%) You will randomly be assigned a TEKS standard from a grade level. You will be required to videotape yourself modeling the concrete, representational, and abstract stage and then put it on a USB Flash Drive that I will collect.
- Exams (Total 30%) - You will have two exams this semester covering readings, video presentations, class presentations, and in-class assignments. These will be given in class and according to the course schedule.
- Final (15%) - You will be given a take home final exam. You will randomly assigned a case study that requires you to script a lesson plan (template provided) and answer some other instructional decision questions regarding the case study.

Grading Information
15% - Micro-Teaching Video
15% - Assessment 1
15% - Assessment 2
15% - Take Home Final
10% - Interactive Notebook
10% - Weekly Discussion Board Posts
10% - Weekly Text Check
5% - Weekly Quick Check
5% - Gallery Presentation

90-100% = A
80-89% = B
70-79% = C
50-69% = D
<60% = F
Assignments

Micro-Teaching: In order to be a successful mathematics teacher you need to practice teaching. Throughout the semester we will have formative teaching opportunities to improve our teaching. The Micro-Teaching assignment is the culminating assessment of all this practice. You will be given a TEKS standard and be required to model (as if you were teaching children) one example for the concrete, representational, and abstract stage. In order to accommodate all students you will need to video tape your lesson and put it on your flash drive. I will be collecting your USB Flash Drive at class on April 21st. You will then create a tri-fold presentation depicting what you did at each stage of the CRA sequence. The TriFold will be due on May 5, the last day of class. A model video, a rubric, and directions for this assignment can be accessed on eCampus under the Assignments tab and then in the Micro-Teaching folder.

Assessment 1 & 2: The assessment will cover the mathematical content covered in class, interactive notebook material worked on in class, and the required text readings up to that point. A review sheet will be given out a week prior to the assessment. Assessment 1 will be on February 24 & Assessment 2 will be on April 30th. During this time we will discuss the format of the assessment. The review sheets will be posted under the Assignments tab and then in the Assessments folder.

Take Home Final: Throughout the semester you will be responding to brief case study examples on the discussion board. The take home final will be an extended version of these case studies. You will be randomly assigned to a case study and be required to script a lesson plan (template provided) and answer some brief instructional design questions. The Take Home Final is due at 11:59 pm May 11 via email. A rubric with directions for this assignment can be accessed on eCampus under the Assignments tab and then in the Take Home Final folder.

Interactive Notebook: We will begin setting up our interactive notebooks the first class. This is a dual purpose activity. It teaches you how to incorporate interactive notebooks with the students you teach and it serves as a resource for all the mathematical content we learn this semester. We will look at some example interactive notebooks from the past semester. A rubric is available on eCampus under the Assignments tab and then in the Interactive Notebook folder. The Interactive Notebooks are due the final class period, May 5.

Weekly Text Check: The assigned reading for the class is essential to build the theoretical foundation required to become an expert mathematical teacher. In order to hold you accountable we will have a text check on random class days. The check up will be on the assigned reading for that class and will be 5 questions or less; the check up will be administered at the start of class. If you miss a text check up because of tardiness or an unexcused absence then you will get a 0 with no chance at making it up.

Weekly Discussion Board Post: The discussion board posts will require you to apply the reading to a brief case study. Every TUESDAY before our class you will need to respond to the case study prompt on the eCampus discussion board citing evidence from the reading, prior classes, or your experience in your placement. After our Tuesday class and before our Thursday class you will need to critique a classmate’s post citing readings and what we did in
class. A rubric for the discussion board posts can be accessed on eCampus under the Assignments tab in the Weekly Discussion Board Post folder.

**Weekly Quick Check:** Our class activities will be valuable learning opportunities. I will model a plethora of mathematical discussions and you will have the opportunity to watch, learn, and then practice these yourselves. Occasionally, you will be given quick checks, which will be assessing you on the content we did during that class period.

**Gallery Presentation:** Our last class period will result in a Gallery Walk presentation of the Micro-Teaching. Your Tri-Fold will be graded in addition to the feedback you provide to your classmates.

**TAMU Statements**

**ADA 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 the Department of Student Life, Disability Services in Room B118 of Cain Hall, or call 845-1637. Helpful information is located at http://disability.tamu.edu.

**Plagiarism Statement:** As commonly defined, plagiarism consists of passing off as one's own the 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 questions regarding plagiarism, please consult the latest issue of the *Texas A&M University Student Rules*, [http://student-rules.tamu.edu](http://student-rules.tamu.edu).

**Copyright Statement:** The materials used in this course are copyrighted. These materials 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 permission is expressly granted.

**Scholastic Dishonesty:** Instances of scholastic dishonesty will be treated in accordance with Section 20 of the TAMU Student Rules. Please inform yourself on the student rules regarding cheating, plagiarism, fabrication of information, conspiracy at the website [http://aggiehonor.tamu.edu/RulesAndProcedures/](http://aggiehonor.tamu.edu/RulesAndProcedures/).

**Academic Integrity:** 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 process of the Honor System. For additional information, please visit [www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/). Please print and sign the following on assignments and examinations: “On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work.”
Respect Statement: The faculty of the College of Education and Human Development value and respect diversity and the uniqueness of each individual. The faculty affirms its dedication to non-discrimination in our teaching, programs, and services on the basis of race, color, religion, gender, age sexual orientation, domestic partner status, ethnic or national origin, veteran status, or disability. The College of Education and Human Development at Texas A & M University is an open and affirming organization that does not tolerate discrimination, vandalism, violence or hate crimes. We insist that appropriate action be taken against those who perpetrate such acts. Further, the College is committed to protecting the welfare, rights, and privileges of anyone who is a target of prejudice or bigotry. Our commitment to tolerance, respect, and action to promote and enforce these values embraces the entire university community. In the spirit of shared responsibility, each University unit, student organization, and community member is encouraged to help make our campus, and this class, a welcoming place for all. Should you have any concerns related to respect for diversity or feel that you (or any others) are being discriminated against, please contact your departmental Ombudsperson, or the Department Head, or the College Ombudsperson.

Course Schedule *

Readings: A: Articles that are uploaded on eCampus; VW: Van De Walle Textbook

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading Due</th>
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| January 20 (1) | ✓ TEKS  
✓ Process Standards  
✓ Dispositions of Successful Mathematical Teachers  
✓ CRA | A  
*Doing What Works*  
VW  
*p.2-3 The Six Principles*  
*p.4 Table 1.1*  
*p.6 Table 1.2*  
*p. 9-10 Becoming a Teacher of Mathematics*  
*p.23-26 What does it mean to Understand Mathematics?* |
| January 22 (2) | ✓ Strategy Instruction  
✓ STAR  
✓ DRAW  
✓ FAST DRAW  
✓ RENAME | A  
*STAR Maccini; DRAW*  
VW  
*p.21-23 Implications for Teaching Mathematics*  
*p.24-26 Tools and Manipulatives; Examples of Tools; Ineffective Use of Tools and Manipulatives; Technology Based Tools*  
*p.33-34 Four-Step Problem-Solving Process; Problem-Solving Strategies*  
*p. 38-40 Children’s Literature*  
*p.64-70 Planning for All Learners* |
| January 27 (3) | ✓ One to one correspondence  
✓ Subitizing  
✓ One More/One Less | VW  
*Chapter 8* |
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<tr>
<th>Date</th>
<th>Topic</th>
<th>Notes</th>
</tr>
</thead>
</table>
| January 29 (4) | ✅ Skip Counting  
✅ Counting on the Decade  
✅ Even Odd  
✅ Prime/Composite | 🔢 Using Manipulatives  
*p.96-102 Providing for Students who Struggle and those with Special Needs* |
| February 3 (5) | ✅ Five Frame  
✅ Ten Frames  
✅ Double Ten Frame  
✅ Hundreds Chart  
✅ Number Lines | 🔢 p.155 2 paragraphs on number lines  
*p.223-225 Figure 12.6,12.7,12.8*  
△ Number Lines |
| February 5 (6) | ✅ Place Value (whole #)  
✅ Place Value (decimals)  
✅ Expanded Form  
✅ Comparing Numbers  
✅ Ordering Numbers | 🔢 Chapter 11 |
| February 10 (7) | ✅ Contextualized Problems  
✅ Problem Structure (addition/subtraction)  
✅ Problem Structure (multiplication/division)  
✅ The Equal Sign | 🔢 |
| February 12 (8) | ✅ Introducing Addition  
✅ Addition Algorithm (CRA)  
✅ Addition w/ (ten frame, number lines, hundreds chart, student invented strategies)  
✅ Word Problems (Addition) | △ Contextual Teaching  
*Understanding the Equal Sign* |
| February 17 (9) | ✅ Introducing Subtraction  
✅ Subtraction Algorithm (CRA)  
✅ Subtraction w/ (ten frame, number lines, hundreds chart, student invented strategies)  
✅ Word Problems (Subtraction) | 🔢 Chapter 12 |
| February 19 (10) | ✅ Introducing Multiplication  
✅ Multiplication Algorithm (CRA)  
✅ Multiplication w/ (hundreds chart, number line, arrays, student invented strategies)  
✅ Word Problems (Multiplication) | 🔢 Chapter 13 |
| February 24 (11) | ✅ Introducing Division  
✅ Division Algorithm (CRA)  
✅ Division w/ (arrays, number lines, student invented strategies)  
✅ Word Problems (Division) | △ Addends Unknown  
*Inverse Name Game* |
| February 26 (12) | ✅ Introducing Fractions  
✅ Partitioning  
✅ Equal Parts (examples/non-examples)  
✅ Benchmark Fractions  
✅ Manipulatives (premade/student made) | △ Equal Parts  
*Benchmark Fractions* |
| March 3 (13) | ✅ Comparing Fractions  
✅ Equivalent Fractions  
✅ Simplifying Fractions | △ Equivalent Fractions  
*VW* |
<table>
<thead>
<tr>
<th>Date</th>
<th>Topics</th>
<th>Page/Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 5</td>
<td>✓ Word Problems with Fractions</td>
<td>p.304-312 Equivalent Fractions</td>
</tr>
<tr>
<td></td>
<td>✓ Fractions Greater than 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Fractions on a Number Line</td>
<td></td>
</tr>
<tr>
<td>March 10</td>
<td>✓ Addition of Fractions (CRA)</td>
<td>VW p.302-303 Fractions Greater than 1</td>
</tr>
<tr>
<td>(15)</td>
<td>✓ Word Problems (Addition of Fractions)</td>
<td>A Making Fractions Make Sense</td>
</tr>
<tr>
<td></td>
<td>✓ Subtraction of Fractions (CRA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Word Problems (Subtraction of Fractions)</td>
<td></td>
</tr>
<tr>
<td>March 12</td>
<td>✓ Multiplying Fractions (CRA)</td>
<td>VW p.315-325 (add &amp; subtract)</td>
</tr>
<tr>
<td>(16)</td>
<td>✓ Word Problems (Multiplying Fractions)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Dividing Fractions (CRA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Word Problems (Dividing Fractions)</td>
<td></td>
</tr>
<tr>
<td>March 24</td>
<td>✓ Adding Decimals (CRA)</td>
<td>VW p.325-335 (multiply &amp; divide)</td>
</tr>
<tr>
<td>(17)</td>
<td>✓ Word Problems (Addition of Decimals)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Subtracting Decimals (CRA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Word Problems (Subtraction of Decimals)</td>
<td></td>
</tr>
<tr>
<td>March 26</td>
<td>✓ Multiplying Decimals (CRA)</td>
<td>VW p.348-349 Computation with Decimals (Add &amp; Subtract)</td>
</tr>
<tr>
<td>(18)</td>
<td>✓ Word Problems (Multiplying Decimals)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Dividing Decimals (CRA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Word Problems (Dividing Decimals)</td>
<td></td>
</tr>
<tr>
<td>March 31</td>
<td>✓ Percents</td>
<td>A Understanding Decimals</td>
</tr>
<tr>
<td>(19)</td>
<td>✓ Converting Fractions, Decimals, &amp; Percents</td>
<td>VW p.349-351 Computation with Decimals (Multiply &amp; Divide)</td>
</tr>
<tr>
<td>April 2</td>
<td>✓ Inequalities</td>
<td>A Using Art Connecting Fractions, Decimals, Percents Can Make Sense</td>
</tr>
<tr>
<td>(20)</td>
<td>✓ Writing Inequalities</td>
<td>VW p.262-270 Meaningful Use of Symbols</td>
</tr>
<tr>
<td></td>
<td>✓ Algebraic Expressions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Writing Algebraic Expressions</td>
<td></td>
</tr>
<tr>
<td>April 7</td>
<td>✓ Order of Operations</td>
<td>A PEMDAS Story Truth about PEMDAS</td>
</tr>
<tr>
<td>(21)</td>
<td>✓ Solving Algebraic Equations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Word Problems involving Algebraic Equations</td>
<td></td>
</tr>
<tr>
<td>April 9</td>
<td>✓ Introducing Negative Numbers</td>
<td>VW Chapter 23</td>
</tr>
<tr>
<td>(22)</td>
<td>✓ Adding Integers (CRA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Subtracting Integers (CRA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Word Problems (Addition and Subtraction of Integers)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Rational/Irrational Numbers</td>
<td></td>
</tr>
<tr>
<td>April 14</td>
<td>✓ The Van Hiele Levels of Geometric Thought</td>
<td>VW p.402-419 (Stop at Transformation)</td>
</tr>
<tr>
<td>(23)</td>
<td>✓ Visualization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Informal Deduction</td>
<td></td>
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<tr>
<td>April 16</td>
<td>✓ Introducing Perimeter (CRA)</td>
<td>A Perimeter and Area</td>
</tr>
<tr>
<td>(24)</td>
<td>✓ Introducing Area (CRA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Introducing Surface Area (CRA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Introducing Volume (CRA)</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Assignment/Details</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>April 21 (25)</td>
<td>✓ Recognizing Patterns ✓ Function Tables ✓ Central Tendency ✓ Dispersion</td>
<td>Mini-Teach Flash Drive Due VM P.272-280</td>
</tr>
<tr>
<td>April 23 (26)</td>
<td>✓ Organizing Data ✓ Reading Graphs ✓ Creating Graphs ✓ What graph fits my data?</td>
<td>VM p.396-400 Time; Money A Graphing</td>
</tr>
<tr>
<td>April 28 (27)</td>
<td>✓ Telling Time ✓ Identifying Coins and their amounts ✓ Coin Sums</td>
<td></td>
</tr>
<tr>
<td>April 30 (28)</td>
<td>Assessment #2</td>
<td>Give out Final Exam Case Study</td>
</tr>
<tr>
<td>May 5 (29)</td>
<td>Gallery Presentation</td>
<td>Tri-Fold Due</td>
</tr>
<tr>
<td>May 11</td>
<td>Take Home Exam due via email at 11:59pm</td>
<td></td>
</tr>
</tbody>
</table>

*This is a tentative schedule that can change*
Change in Curriculum
CHANGE IN CURRICULUM

COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

BS IN INTERDISCIPLINARY STUDIES

SPECIAL EDUCATION EC-12
Texas A&M University
Request for a Change in Curriculum

1. Request change for: ☒Degree Program ☐Minor ☐Certificate

2. Request submitted by (Department or Program Name):
   Special Education Program, Educational Psychology Department

3. Program Designation and Name
   B. S. in Interdisciplinary Studies

4. Brief description of change: Two classes have been dropped from the special education curriculum and those are being replaced. The math class is increasing to 4 credit hours due to the need to cover new certification requirements.

5. Rationale for change: Certification exams are changing and students will need to be able to pass subsections of the test, so core teaching areas need to be strengthened.

Use the checkboxes below to make sure that all information is included.

6. a. Proposed curriculum attached. ☒Yes ☐No
   b. Current catalog curriculum with handwritten edits attached. ☒Yes ☐No
   c. Current Howdy degree evaluation with handwritten edits attached. ☒Yes ☐No

   Please make sure the attached proposed curriculum, catalog and Howdy degree evaluation match.

7. a. Will degree program hours change (increase/decrease) due to the proposed curriculum changes? ☒Yes ☐No
   b. If yes, degree program hours will change from: _________ to: _________
   c. If yes, is the Texas Higher Education Coordinating Board form attached? ☐Yes ☒No

   http://www.thecb.state.tx.us/index.cfm?objectid=A0F9F7FA-9A92-4F11-2756AD3BBFF01D60

8. If proposed changes affect other unit(s), are letters of support attached? ☒Yes ☐No

IMPORTANT NOTE: Curriculum changes submitted through the approval process and fully approved by February (December-UCC/GC, January-Faculty Senate, February-President) will be effective in the next academic year. Changes requiring approval beyond the University should complete the internal approval process early in the fall semester whenever possible in order to ensure timely implementation.

Approval recommended by:

Victor Willson, Ph.D. ___________________________ Christopher Cherry, Ph.D. ___________________________
Department Head or Program Chair (Type Name & Sign) Date Dean of College Date

Christopher Cherry, Ph.D. ___________________________
Chair, College Review Committee Date

Chair, GC or UCC Date

Questions regarding this form should be directed to Curricular Services at 845-8201 or samk-24@tamu.edu
Curricular Services – 07/12
# Department of Educational Psychology

## Bachelor of Science in Interdisciplinary Studies (INST)

### Special Education Degree Plan (PK-12) | Catalog 138

**Name** ____________________________ **UIN** ____________________________

### Basic Requirements (18 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 206</td>
<td>3</td>
</tr>
<tr>
<td>POLS 207</td>
<td>3</td>
</tr>
<tr>
<td>EPSY 320, 321</td>
<td>3</td>
</tr>
<tr>
<td>CREATIVE ARTS</td>
<td>3</td>
</tr>
<tr>
<td>CULTURE, PHILOSOPHY, LANGUAGE</td>
<td>3</td>
</tr>
<tr>
<td>HLTH/KINE 214</td>
<td>3</td>
</tr>
<tr>
<td>EPSY 484</td>
<td>4</td>
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</tbody>
</table>

### Courses Required to Complete Special Education Emphasis (31 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 302 (a)</td>
<td>3</td>
</tr>
<tr>
<td><strong>SPED 310 (W)</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>SPED 311</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>SPED 312</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>SEFB 420 (W)</strong></td>
<td>3</td>
</tr>
<tr>
<td>SPED 314</td>
<td>4</td>
</tr>
<tr>
<td><strong>SPED 442</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>SPED 471</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>EPSY 428 (W)-TEFB 413</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>EDTC 311</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>SPED 414</strong></td>
<td>3</td>
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</tbody>
</table>

### Professional Studies (18 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>TEBF 273</td>
<td>3</td>
</tr>
<tr>
<td>EPFB 210</td>
<td>3</td>
</tr>
<tr>
<td>EPFB 301</td>
<td>3</td>
</tr>
<tr>
<td>EPFB 401</td>
<td>3</td>
</tr>
<tr>
<td><strong>SEFB 425</strong></td>
<td>6</td>
</tr>
</tbody>
</table>

(a) Must make a grade of B or higher
(W) Writing Intensive Course

**Note:**
- No grade of D will be accepted in any coursework.
- Students must maintain a minimum cumulative grade point average of 2.75.
- Degree plans are subject to change in order to meet state requirements.
- Students are responsible for adhering to course and degree plan requirements.

Student ____________________________ Date ____________

Advisor ____________________________ Date ____________

Foreign Language Requirement __________
(2 semesters or 2 years in high school)

### Interdisciplinary Studies (39 hours)

#### LANGUAGE ARTS (9 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 103, 104</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 203, 210</td>
<td>3</td>
</tr>
<tr>
<td>RDNG 372</td>
<td>3</td>
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</tbody>
</table>

#### MATH (12 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 141, 166</td>
<td>3</td>
</tr>
<tr>
<td>MATH 131, 142</td>
<td>3</td>
</tr>
<tr>
<td>MATH 365</td>
<td>3</td>
</tr>
<tr>
<td>MATH 366</td>
<td>3</td>
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</tbody>
</table>

#### SCIENCE (9 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 101, BIOL 107, BIOL 111, BIOL 113/123</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 106/116, GEOG 203/213, GEOL 101, GEOL 106</td>
<td>4</td>
</tr>
<tr>
<td>KINE 120</td>
<td>1</td>
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</tbody>
</table>

#### SOCIAL STUDIES (9 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 105, 106</td>
<td>3</td>
</tr>
<tr>
<td>HIST 226</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 301, 305, 355</td>
<td>3</td>
</tr>
</tbody>
</table>

### Professional Undergirding Disciplines (15 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>INST 210 (a)</td>
<td>3</td>
</tr>
<tr>
<td>INST 301</td>
<td>3</td>
</tr>
<tr>
<td><strong>INST 222</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>INST 462</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>INST 463</strong></td>
<td>3</td>
</tr>
<tr>
<td>EDCI 365</td>
<td>3</td>
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</tbody>
</table>

* Students must be admitted into professional phase of program before enrollment in upper level coursework.

** Courses leading to ESL certification

*** Student Teaching semester

Certifies to teach:
- Special Education PK-12
- General Education PK-6
- ESL

**Total Hours Required for Graduation:** 124

http://epsy.tamu.edu/ Revised 02/2015
Curriculum for Special Education

The following curriculum leads to a Bachelor of Science degree in Interdisciplinary Studies with certification in Special Education K-12. Students are required to meet with their assigned academic advisor prior to registration each semester.

### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>(Th-Pr)</th>
<th>Cr</th>
<th>Second Semester</th>
<th>(Th-Pr)</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 103 Intro. to Rhetoric and Comp. or ENGL 104 Comp. and Rhetoric</td>
<td>(3-0)</td>
<td>3</td>
<td>HIST 226 History of Texas</td>
<td>(3-0)</td>
<td>3</td>
</tr>
<tr>
<td>or HIST 106 History of the U.S.</td>
<td>(3-0)</td>
<td>3</td>
<td>INST 210 Understanding Special Pop. or MATH 131 Math. Concepts – Calculus</td>
<td>(3-0)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141 Business Math I or MATH 166 Topics in Contemp. Math. I</td>
<td>(3-0)</td>
<td>3</td>
<td>POLS 207 State and Local Govt. or Life and physical sciences</td>
<td>(3-0)</td>
<td>3</td>
</tr>
<tr>
<td>Life and physical sciences</td>
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<td>16</td>
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</table>

### SUMMER SEMESTER

English elective | 3 |

### SOPHOMORE YEAR

<p>| | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>EPPF 210 Family Involvement Empowerment</td>
<td>(2-3)</td>
<td>3</td>
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<tr>
<td>or EPSY 320 Child Development</td>
<td></td>
<td></td>
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<tr>
<td>or EPSY 321 Adolescent Development</td>
<td>(3-0)</td>
<td>3</td>
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<tr>
<td>KINE 120 The Science of Basic Health and Fitness</td>
<td>(1-1)</td>
<td>1</td>
</tr>
<tr>
<td>MATH 365 Structure of Math. I</td>
<td>(3-0)</td>
<td>3</td>
</tr>
<tr>
<td>TEPB 273 Intro. to Culture, Comm., Society and Schools</td>
<td>(2-3)</td>
<td>3</td>
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<tr>
<td>*Creative arts elective</td>
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### SUMMER SEMESTER

INST 301 Educational Psychology | (3-0) | 3 |

### JUNIOR YEAR

<p>| | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>EPPF 301 Teaching Skills I</td>
<td>(1-6)</td>
<td>3</td>
</tr>
<tr>
<td>or GED.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or SPED 310 Instr. Strat. St. with Disabl.</td>
<td>(3-0)</td>
<td>3</td>
</tr>
<tr>
<td>SPED 312 Eff. Read. Instr. for Students with Diverse Abilities</td>
<td>(3-0)</td>
<td>3</td>
</tr>
<tr>
<td>SPED 414 Methods and Issues in Low-Incidence Disabilities</td>
<td>(4-0)</td>
<td>4</td>
</tr>
<tr>
<td>TEPB 413 Science in Elec. School</td>
<td>(3-0)</td>
<td>3</td>
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</table>

**Note:** Lang., philosophy and culture elective... 6
**SENIOR YEAR**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDTE 301 Adaptive/Assistive Technology</td>
<td>SEFB 425 Student Teaching in Spec. Ed.</td>
</tr>
<tr>
<td>GEOG 301 Geography of the U.S. or GEOG 305 Geography of Texas or GEOG 355 Concepts in Geog. Education...</td>
<td>(0-24)</td>
</tr>
<tr>
<td>(3-0)</td>
<td>(3-0)</td>
</tr>
<tr>
<td>INST 463 English as a Second Language Methods II.........................</td>
<td>SEFB 420 Ed. and Employment Issues in Secondary Special Ed. (W course)......</td>
</tr>
<tr>
<td>(3-0)</td>
<td>(3-0)</td>
</tr>
<tr>
<td>RDNG 372 Read. and Wrt. across the Middle Grades Curriculum.............</td>
<td>3</td>
</tr>
<tr>
<td>(3-0)</td>
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</tr>
<tr>
<td>total hours</td>
<td>124</td>
</tr>
<tr>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**
1. Life and physical science elective to be choose from BIOL 101, BIOL 107, BIOL 111, BIOL 113/BIOL123.
2. Life and physical science elective to be choose from CHEM 101/CHEM 111, CHEM 106/CHEM 116, GEOG 203/GEOG 213, GEOG 301, GEOL 101, GEOL 106.
3. English elective to be choose from ENGL 203, ENGL 210.

* Creative arts. See page 17.
** Language, philosophy and culture. See page 17.

**Health and Kinesiology**

The Department of Health and Kinesiology offers degrees in Health, Kinesiology, Sport Management and University Studies. Several tracks are offered for students who are interested in a career in these fields. All students majoring in the Department of Health and Kinesiology are assigned an advisor in accordance with their career choice.

The curricula in Health, Kinesiology, Sport Management and University Studies offer opportunities to obtain professional preparation for careers as health and physical education teachers in public and private schools, coaches, sport administrators, community health educators, clinical and applied exercise physiologists, exercise scientists, recreational leaders (in non-school agencies), dance scientists, sports marketing professionals and athletic administrators. The department also provides academic preparation for students interested in allied health and medical related professional schools, e.g., physical therapy, occupational therapy, physicians' assistant or medicine.

The Department of Health and Kinesiology also offers minors in coaching, dance and sport management. The coaching and dance minors consist of 18 credit hours. The sport management minor is 15 credit hours. A list of courses and enrollment information regarding the minor may be obtained from the Advising Office in the Department of Health and Kinesiology.

The Department of Health and Kinesiology also offers the Master of Education, Master of Science, Doctor of Education and Doctor of Philosophy degrees.

**Teacher Certification**

Students majoring in either Health or Kinesiology may qualify for a Provisional Teaching Certificate after being admitted to teacher education, completing the prescribed requirements, and being recommended by the department to the Texas Education Agency through the University’s Council for Teacher Education. Completion of this degree and other academic requirements does not automatically assure that the student...
Information for Degree Evaluation

This is NOT an official evaluation.

Program Evaluation

Limitation Correspondence: No more than 12 hours of correspondence earned through an accredited institution may be used for an undergraduate degree.

Limitation Combination: Maximum combination of 18 hours of 481, 482, 485 and/or 491 courses may be used for an undergraduate degree.

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This is NOT an official evaluation.

Area Major Coursework (124.000 credits) - Not Met!

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unofficial evaluation

Total Credits and GPA 0.000 .00
unofficial evaluation

**Area Mathematics (12.000 credits) - Not Met**

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Total Credits and GPA 0.000 .00

unofficial evaluation

**Area Life and Physical Science (9.000 credits) - Not Met**

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<td>Must have a grade of 'C' or better.</td>
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Total Credits and GPA 0.000 .00

unofficial evaluation

**Area Language, Philosophy & Culture (3.000 credits) - Not Met**

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<td>Select any course with the Language, Philosophy, and Culture attribute [KPC]. Must have a grade of 'C' or better.</td>
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Total Credits and GPA 0.000 .00

unofficial evaluation

**Area Creative Arts (3.000 credits) - Not Met**

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unofficial evaluation
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<td>C. EPFB 301 and 40L hrs</td>
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<td>D. SEPB 425 6hrs</td>
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**unofficial evaluation**

### Area Special Education Emphasis (35.000 credits) - Not Met

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Total Credits and GPA  0.000  .00

**unofficial evaluation**

### Area Communication (6.000 credits) - Not Met

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Total Credits and GPA  0.000  .00

**unofficial evaluation**
### Area Social and Behavioral Science (3.000 credits) - Not Met

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Must make a grade of 'C' or better.
Select from EPSY 320, 321.

Total Credits and GPA 0.000 .00

### Unofficial Evaluation

### Area Citizenship (12.000 credits) - Not Met

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<th>Required Courses</th>
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Select from HIST 105 or 106. Must have a grade of 'C' or better.

| No | AND      | B.        | TX History Reqmt 3hrs |            |                  |              |              |           |         |       |        |
|    |          |           |                      |           |                  |              |              |           |         |       |        |

Select from HIST 226. Must have a grade of 'C' or better.

| No | AND      | C.        | POLS 206 |            |                  |              |              |           |         |       |        |
|    |          |           |          |           |                  |              |              |           |         |       |        |

Must have a grade of 'C' or better.

| No | AND      | D.        | POLS 207 |            |                  |              |              |           |         |       |        |
|    |          |           |          |           |                  |              |              |           |         |       |        |

Must have a grade of 'C' or better.

Total Credits and GPA 0.000 .00

### Unofficial Evaluation

### Area: Work Not Applied - Met

**Description**
See advisor for acceptable substitutions.

<table>
<thead>
<tr>
<th>No</th>
<th>Condition</th>
<th>Subject</th>
<th>Attribute</th>
<th>Low High Credits</th>
<th>Required Courses</th>
<th>Term Subject</th>
<th>Course Title</th>
<th>Attribute</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>No</td>
<td>A.</td>
<td>Courses not applied</td>
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</table>

Total Credits and GPA 0.000 .00

### Unofficial Evaluation

### Area University Writing Requirement - Not Met

<table>
<thead>
<tr>
<th>No</th>
<th>Condition</th>
<th>Subject</th>
<th>Attribute</th>
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<th>Required Courses</th>
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</tr>
</tbody>
</table>

Two courses required. **SPEI 310**
Only sections of 574, 575, 580, 714, 715, 720, 752, 753.
Writing attribute (UWRT) may be used to satisfy this requirement.

Total Credits and GPA 0.000 .00

### Unofficial Evaluation

### Area Int'l & Cult Diversity - Not Met

<table>
<thead>
<tr>
<th>No</th>
<th>Condition</th>
<th>Subject</th>
<th>Attribute</th>
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<th>Grade</th>
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<tr>
<td>No</td>
<td>A.</td>
<td>Int'l &amp; Cultural Diversity 6hr</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Select from courses with the International and Cultural Diversity attribute [IJCD] (except sections of BUSN 289 with the UWRT attribute).

Total Credits and GPA 0.000 .00

https://compass-ssl.tamu.edu/pls/PROD/bwckcapp.P_VerifyDispEvalViewOption
### Area: Foreign Language - Not Met

<table>
<thead>
<tr>
<th>No</th>
<th>A.</th>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Foreign Language Rqmt</td>
<td></td>
</tr>
</tbody>
</table>

*Complete one of the following:*
1. Two years of the same foreign language in High School.
2. A two semester sequence of the same foreign language for University credit.

Total Credits and GPA: 0.000 .00

### Area: Residence Requirement - Not Met

<table>
<thead>
<tr>
<th>No</th>
<th>A.</th>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Residence 300-499 36hrs</td>
<td></td>
</tr>
</tbody>
</table>

*Select 36hrs from any 300-400 level course at Texas A&M University.*

Total Credits and GPA: 0.000 .00

### Area: GPR-Major - Not Met

<table>
<thead>
<tr>
<th>No</th>
<th>A.</th>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Major GPR 71+hrs</td>
<td></td>
</tr>
</tbody>
</table>

*Select from BIOL 101, 107, 111, 113, 123; CHEM 101, 105, 116; ECON 202-203; EDUC 311; ENGL 104, 210; EPPB 210, 301, 401; EPSY 428; GEOG 203, 213, 301, 305, 355; GEOL 101; HIST 105-106, 226; INST 210, 222, 301, 462, 463; MATH 131, 141-142, 166; PHYS 201; RDNG 372; SEFB 420, 425; SPED 302, 310, 311-312, 314, 320, 414, 425-426, 442, 471; TEFB 273;*

Total Credits and GPA: 0.000 .00

Back to Display Options

Print
classes for fall 2015
2 messages

Janet Hammer <jhammer@cehd.tamu.edu>  
To: Patricia Lynch <pslynch@tamu.edu>  

Wed, Nov 5, 2014 at 5:07 AM

Hi Pat,

After our conversation, I met with Dr. Yeping Li and confirmed that TLAC supports the following.

SPED students will take EDCI 365 Technology in the Classroom in place of EDTC 511.

SPED students will take TEFB 413 Science in the Elementary School in place of EPSY 428.

In our efforts to make certain we meet your students' needs, will you please share what days your students are in the field during the semester they will take TEFB 413?

Thanks,
Janet

Patricia Lynch <pslynch@tamu.edu>  
To: Janet Hammer <jhammer@cehd.tamu.edu>  

Wed, Nov 5, 2014 at 12:47 PM

This is great news. They will be in schools on Thursday and Friday. Thanks, Pat

[Quoted text hidden]

--
Patricia S. Lynch
Department of Educational Psychology
Texas A&M University
4225 TAMU
College Station, TX 77843-4225
979-845-9462, fax 979-862-1256
http://www.coe.tamu.edu/~plynch/
pslynch@tamu.edu
SPECIAL CONSIDERATION
SPECIAL CONSIDERATION

SCHOOL OF LAW
ANY BACHELOR’S DEGREE AND JD IN LAW
REQUEST FOR A 3+3 PROGRAM
March 30, 2015

To:      Tim Scott, Chair
         Undergraduate Curriculum Committee

                     Mark Zoran, Chair
                     Graduate Council

From:    Aric Short, Vice Dean and Professor
         Texas A&M University School of Law

                     Ann Kenimer, Associate Provost for Undergraduate Studies

Re:      Special Consideration, 3+3 Bachelor’s/JD Program

Texas A&M University School of Law proposes a 3+3 educational program that would allow qualified
Texas A&M University undergraduates the opportunity for early admission and expedited professional
degree completion. The proposed framework would allow students to satisfy up to one quarter of their
required undergraduate credit hours by successfully completing professional-level coursework at the
School of Law. Applicability of professional-level coursework to undergraduate degree requirements will
be at the discretion of the student’s undergraduate college. At a minimum, students would complete
180 credit hours of coursework for both degrees. Because the proposed program requires a good deal of
flexibility in the undergraduate curriculum, it may not be applicable to all undergraduate majors.
However, we believe that high-achieving students across many majors will be able to take advantage of
this excellent opportunity.

The attached proposal addresses completion of core curriculum and graduation requirements, the
application process, grade requirements, and timelines for awarding degrees.
Texas A&M University
Proposed 3+3 Bachelor’s / JD Program
Proposed Framework

1. Prior to enrolling in the School of Law, students must have completed at least 75% of their required undergraduate credit hours plus all undergraduate degree requirements that cannot be fulfilled through completion of coursework offered by the School of Law. Upon successful completion of the first year of coursework required of full-time students at the School of Law (or at whatever later point students successfully complete at the School of Law the required number of credit hours remaining for their undergraduate degree), 3+3 students will be awarded their bachelor’s degree. Those equivalent credit hours will also count toward the 90 hours that students must earn for their Juris Doctor degree.

2. Credit for advanced placement, transfer, and dual credit courses are subject to the approval of each student’s undergraduate degree program. Students must complete the core curriculum requirements, thirty-six upper-level credit hours to satisfy university residency requirements (at least twelve upper-level credit hours must be in the major), and all additional graduation requirements published in their undergraduate catalog.

3. Student Application Process
   a) Student should meet with pre-law advisor at Texas A&M University as soon as possible (at the latest by the completion of sixty acceptable degree program credit hours).
   b) Student must meet with academic advisor at Texas A&M University no later than completion of sixty acceptable credit hours and must prepare a tentative degree plan for entry into the 3+3 program (all core curriculum hours, credit hours required to satisfy residency and major requirements, and graduation requirements to be included).
   c) After completing between forty-five and sixty hours of credit, student
      1) prepares for LSAT, takes test, and applies to the School of Law or
      2) applies to the School of Law through the “10% Rule.” The 10% Rule is a new American Bar Association Standard that allows a law school to admit up to 10% of its incoming class from its home institution without requiring those students to
take the LSAT. In particular, the 10% Rule requires the following:

i. Student must have scored at or above the 85th percentile on the ACT or SAT; and
ii. Student must be ranked in the top 10% of their undergraduate class through six semesters of academic work or have achieved a cumulative GPA of 3.5 or above through six semesters of academic work.

d) Fall of the junior year (having completed approximately sixty credit hours): Student applies for admission to the School of Law through the normal law school admissions process.

e) Fall/Spring of the junior year: School of Law admissions office interviews selected applicants and makes a decision on whether to accept or deny each applicant.

f) Successful applicants begin law school in the fall of the accepted year.

4. Grade Point Requirements

a) Students applying through the 3+3 program must have an undergraduate grade point average of at least 3.25. Each student is allowed one semester of grades below a 3.25.

b) If a student requests to be considered for the 10% Rule, that student must have attained a 3.5 (or above) grade point average through six semesters at the time of application. A student requesting to be considered for the 10% rule must maintain a 3.5 grade point average on all coursework completed before entering the School of Law.

5. All students applying through the 3+3 program must complete normal procedures required by the School of Law for admission (including application, transcripts, letters of recommendation, and LSAT [if applicable]). In addition, those students must interview with the School of Law during the application process and submit secondary application materials designed for prospective 3+3 students.

6. The decision of whether to admit a student to the School of Law, including any student who has applied to or been accepted into any 3+3 program at the undergraduate level, rests exclusively with the School of Law.
AWARDING OF UNDERGRADUATE DEGREE TIMELINE

Students entering law school through the 3+3 program must enroll at the School of Law on a full-time basis. Their undergraduate degree will be awarded after successful completion of all coursework required for full-time, first-year law students at the TAMU School of Law (or at whatever later point students successfully complete at the School of Law the required number of credit hours remaining for their undergraduate degree), and successful completion of all undergraduate degree and graduation requirements at TAMU.

The student will be responsible for initiating graduation procedures with the Office of the Registrar to verify completion of degree requirements. The participating undergraduate department or program will complete the required degree audit, approve the necessary substitutions, and clear the student to graduate. Students accepted into the 3+3 program will be able to graduate after completion of all of their undergraduate degree and graduation requirements at TAMU, but no earlier than completion of the required first-year full-time coursework at Texas A&M University School of Law.
I. Overview

Law students enrolled on a full-time basis take a total of 29 credit hours in their first year of study: 14 in the fall and 15 in the spring. All students take the following foundational courses in the prescribed fall/spring order.

Fall
- Criminal Law (4 credit hours)
- Torts (4 credit hours)
- Legislation and Regulation (3 credit hours)
- Legal Analysis, Research, and Writing I (3 credit hours)

Spring
- Civil Procedure (4 credit hours)
- Contracts (4 credit hours)
- Property (4 credit hours)
- Legal Analysis, Research, and Writing II (3 credit hours)

Additional information about the law school’s course of study, as well as its academic rules, can be found at http://law.tamu.edu/Portals/0/docs/ProgramsPolicies/2014-15_Programs_Policies_v3_28Oct14.pdf.

II. Course Descriptions

Criminal Law (LAW-7021)
An inquiry into the sources and goals of criminal law, the concepts of actus reus and mens rea, characteristics of specific offenses, inchoate crimes, accomplice liability, and general defenses.

Torts (LAW-7042)
A study of the basic principles of civil liability for harm to persons or property. Topics include intentional torts, negligence, strict liability, defenses, and damages. Additional topics may be included.

Legislation & Regulation (LAW-7418)
An introduction to the role of statutes and administrative regulations in the practice of law, including their creation, amendment, and interpretation. Students will explore such topics as the interpretive and lawmaking roles of the three branches of government; statutory interpretation; delegation and administrative agency
practice; and regulatory governance. The course is a building block for courses in legislation, administrative law, constitutional law, and a wide range of specialized courses that rely on statutory and regulatory law, including bankruptcy, commercial law, environmental law, intellectual property, securities regulation, and tax law.

**Legal Analysis, Research & Writing I and II (LAW-7001 and LAW-7002)**
A study of analysis, research, and writing skills essential to the solution of legal problems and the practice of law. Analytical skills, essential for all of law school and law practice, are covered throughout each course. Students learn the methods of legal research through hands-on library experience. Students will write at least two legal memoranda and a trial brief in the first year.

**Civil Procedure (LAW-7005)**
A study of the rules and doctrines that define the process of civil litigation in American courts, with primary emphasis on the U.S. Constitution, the federal judicial code, and the Federal Rules of Civil Procedure. The course may cover topics such as the jurisdiction and competence of courts, conflicts between state and federal law, pleading, discovery, joinder of claims and parties, disposition without trial, trial and post-trial process, appellate review, and the effects of judgment.

**Contracts (LAW-7017)**
A study of the enforceability of promises, the creation of contractual obligations, performance and breach, the impact of the contract on the legal relationships of nonparties, and the examination of contract doctrine in three settings: personal service, sales of goods, and construction contracts.

**Property (LAW-7032)**
An introduction to personal property and real property laws, including estates and future interests in land, landlord-tenant problems, and issues relating to private and public land use.
SPECIAL CONSIDERATION

COLLEGE OF SCIENCE
DEPARTMENT OF STATISTICS
BS IN STATISTICS
REQUEST FOR A NEW DEGREE PROGRAM
Request Form for Bachelor’s and Master’s Degrees

Following Board action on July 30, 2009, new bachelor’s and master’s programs that meet the following criteria are automatically approved (Chapter 5, Subchapter C, Section 5.44):

- The program has institutional and governing board approval;
- the program complies with the Standards for Bachelor’s and Master’s Programs;
- adequate funds are available to cover the costs of the new program;
- new costs during the first five years of the program will not exceed $2 million;
- the program is a non-engineering program (i.e., not classified under CIP code 14); and
- the program will be offered by a university or health-related institution.

A new bachelor’s or master’s degree program that meets these criteria may be requested using the Certification Form for New Bachelor’s and Master’s Programs and is automatically approved if no objections are received during the 30-day public comment period. The institution’s program inventory will be updated accordingly and a letter of approval will be sent to the institution/System. All other requests for new bachelor’s or master’s programs must be submitted using the Form for Requesting a New Bachelor’s or Master’s Degree Programs.

I. Need

A. Job Market Need – Provide short- and long-term evidence of the need for graduates in the job market.

Statisticians are in demand in all sectors of society. Statisticians use statistical methods to collect and analyze data and help solve real-world problems in business, engineering, the sciences, and other fields. Nearly every agency in the federal government employs statisticians. Biostatisticians work in pharmaceutical companies, public health agencies, and hospitals. In business, statisticians design experiments for product testing and development. Actuaries use mathematics, statistics, and financial theory to study uncertain future events, especially those of concern to insurance and pension companies.

In a 2009 NY Times article, statistics was cited as being a rapidly expanding field, with employers such as Google and IBM hiring increasing numbers from the field. "I keep saying that the sexy job in the next 10 years will be statisticians. And I'm not kidding." Hal Varian, chief economist at Google. "Data availability is going to continue to grow. To make that data useful is a challenge. It's generally going to require human beings to do it," according to Dr. Varian.


According to the Bureau of Labor Statistics, there were 24,950 workers classified as statisticians in 2013. This represents a 21% increase in the five years since 2008. The field was projected to grow by a further 27% (classified by BLS as “much faster than average”) during 2012 – 2022.

http://www.bls.gov/oes/2013/may/oes152041.htm
http://www.bls.gov/ooh/math/statisticians.htm

The Texas Workforce Commission currently lists 500 jobs with the keyword of “statistics” (searched July 11, 2014). According to The Wall Street Journal’s Numbers Guy, Carl Bialik, as of March 2013, there were

28,305 postings for jobs in statistics, analytics, and “big data” at the jobs website icrunchdata; this was up from 16,500 three years earlier.
http://onlin.wsj.com/articles/SB10001424127887323478304578332850293360468

McKinsey Global Institute published a study in May 2011 entitled “Big Data: The next frontier for innovation, competition, and productivity” that predicts “by 2018 the US will have a shortage of 140,000 –
New Program Request Form for Bachelor's and Master's Degrees
Page 2
190,000 people with deep analytical skills as well as 1.5 million managers and analysts with know-how to use the analysis of big data to make effective decisions."
http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation

In December 2014, LinkedIn published a list of the year's "hottest skills" for recruiting on the site. Statistical analysis and data mining was listed as number one.
http://talent.linkedin.com/blog/index.php/2014/12/the-25-hottest-skills-to-recruit-for-on-linkedin

B. Student Demand – Provide short- and long-term evidence of demand for the program.

The number of students taking the Statistics AP exam has increased dramatically in recent years. According to AP Central, 169,508 students took the Statistics AP exam in 2013. This represents a 10% increase over 2012 and a 57% increase in the five years since 2008. By comparison, the Calculus AB AP exam numbers increased just 6% during 2012 – 2013 and 27% in the five years since 2008. In fact, it is claimed that enrollment in AP Statistics classes is increasing more rapidly than enrollment in any other AP area.
http://apcentral.collegeboard.com/apc/members/exam/exam_information/8357.html
http://books.google.com/books?id=ZnvhQ65Pyi4C&printsec=frontcover&hl=en#v=onepage&q=&f=false

According to past ASA president Robert Rodriguez, many undergraduate programs in the U.S. have experienced great increases in the number of statistics majors. Specific examples follow. At Cal Poly San Luis Obispo, the number of majors has grown from 5 in the late 1990s to 60 as of 2012. At Brigham Young University, the numbers have grown from 139 majors six years ago to 240 in 2012. At Purdue, the numbers have doubled from 200 to 400 in the five years preceding 2012. At Carnegie Mellon University, the numbers have grown from 40 in 2006 to 150 in 2012. This rise in numbers can be partially credited to the increased numbers of students taking Statistics AP courses. "We see students coming in as freshmen saying they want to be statisticians," said Robert Gould of the University at California at Los Angeles. Rodriguez, Robert. "A Major Trend: The Rise of Undergraduate Programs in Statistics. " Amstat News. 1 August 2012.
http://online.wsj.com/articles/SB100014241278873234783045783332850293560468

According to the National Center for Education Statistics (NCES) Digest of Education Statistics (DES), the number of bachelor's degrees in statistics increased 40% from 2009 to 2011, 78% from 2003 to 2011, 26% from 2011 to 2012, and 20% from 2012 to 2013. Also, undergraduate enrollments have increased 40% from 2005 to 2010 and 90% from 1995 to 2010. Total introductory statistics enrollments were 81,000 in 2010, according to a Conference Board of the Mathematical Sciences survey. This was about one-third of the enrollments in mathematics departments (231,000) and about three-fifths the enrollments in two-year college mathematics programs (137,000). Enrollments in upper-level courses are more closely balanced between statistics and mathematics departments (27,000 vs. 32,000) than for elementary-level statistics. The total number of bachelor's degrees in statistics awarded through the nation's mathematics and statistics departments between July 1, 2009 and June 30, 2010 was 1,192 – 354 were awarded by mathematics departments, 838 by statistics departments. "At UCLA, we have established firm caps on core classes because demand has outstripped our resources. As a result, we need to work to try to create more opportunities at the undergraduate level for the increased number of students clamoring for more knowledge of statistics," said Robert Gould of UCLA.

http://magazine.amstat.org/blog/2012/11/01/elementarystats/

Eleven of the fifteen Vision 2020 Peer Institutions offer undergraduate degrees in statistics. The largest of these programs are University of California-Berkeley with 143 graduates in 2013 compared to an average of an average of 38 per year from 2003 to 2007 and Purdue University with 135 graduates in 2013 compared to an average of an average of 13 per year from 2003 to 2007. The University of California-Davis, the University of Michigan, the University of Illinois, the University of Minnesota, and the University of California-Los Angeles all had at least 50 graduates in statistics in 2013. Of the programs not offering a degree entitled statistics, the University of North Carolina has a program entitled mathematical decision
New Program Request Form for Bachelor's and Master's Degrees
Page 3

sciences with a large statistical component, and the Ohio State University has a new program called data analytics which is offered jointly by the Department of Statistics and the Department of Computer Science and Engineering.

Rice University, Baylor University, the University of Texas at San Antonio, Southern Methodist University, and the University of Houston-Downtown all offer B.S. degrees in statistics. However, the Department of Statistics at Texas A&M would be the only large statistics department in Texas to offer a B.S. degree in statistics. The Department of Mathematics already offers an Applied Mathematical Sciences (APMS) degree that offers specialization in, among other things, statistics. However, there are very few students in the statistics track (5 or fewer a year), so we expect the vast majority of students pursuing a statistics degree to be new students.

C. Enrollment Projections – Use this table to show the estimated cumulative headcount and full-time student equivalent (FTSE) enrollment for the first five years of the program. (Include majors only and consider attrition and graduation.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Change of Major/Transfers</th>
<th>New Students</th>
<th>Attrition</th>
<th>Graduation</th>
<th>Cumulative Headcount</th>
<th>Cumulative FTES (New only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>25</td>
<td>2</td>
<td>0</td>
<td>28</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>45</td>
<td>4</td>
<td>0</td>
<td>75</td>
<td>64</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>55</td>
<td>5</td>
<td>0</td>
<td>132</td>
<td>114</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>60</td>
<td>6</td>
<td>15</td>
<td>179</td>
<td>169</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>65</td>
<td>7</td>
<td>40</td>
<td>207</td>
<td>228</td>
</tr>
</tbody>
</table>

*These numbers will dictate the projected formula income in the funding source portion in Section III, Anticipated New Formula Funding.

FTES = full-time equivalent student.
Per CB guidelines, 1 FTES = 15 sch for UG, 12 sch for M, and 9 sch for D

II. Quality

A. Degree Requirements – Use this table to show the degree requirements of the program. (Modify the table as needed; if necessary, replicate the table for more than one option.)

For bachelor's degree:

<table>
<thead>
<tr>
<th>Category</th>
<th>Semester Credit Hours</th>
<th>Clock Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education Core Curriculum (bachelor's degree only)</td>
<td>42</td>
<td></td>
</tr>
</tbody>
</table>
New Program Request Form for  
Bachelor’s and Master’s Degrees  
Page 4

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>34</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribed Electives</td>
<td>40</td>
</tr>
<tr>
<td>Free Electives</td>
<td>4</td>
</tr>
<tr>
<td>Other (Specify, e.g., internships, clinical work)</td>
<td>(if not included above)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>120</strong></td>
</tr>
</tbody>
</table>

B. **Curriculum** – Use these tables to identify the required courses and prescribed electives of the program. Note with an asterisk (*) courses that would be added if the program is approved. *(Add and delete rows as needed. If applicable, replicate the tables for different tracks/options.)*

<table>
<thead>
<tr>
<th>Prefix and Number</th>
<th>Required Courses</th>
<th>SCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 171</td>
<td>Analytic Geometry and Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 172</td>
<td>Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Several Variable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 304 or MATH 323</td>
<td>Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>*STAT 182</td>
<td>Foundations of Statistics</td>
<td>1</td>
</tr>
<tr>
<td>STAT 211</td>
<td>Principles of Statistics I</td>
<td>3</td>
</tr>
<tr>
<td>STAT 212</td>
<td>Principles of Statistics II</td>
<td>3</td>
</tr>
<tr>
<td>STAT 414</td>
<td>Mathematical Statistics I</td>
<td>3</td>
</tr>
<tr>
<td>STAT 415</td>
<td>Mathematical Statistics II</td>
<td>3</td>
</tr>
<tr>
<td>STAT 408</td>
<td>Introduction to Linear Models</td>
<td>3</td>
</tr>
<tr>
<td>*STAT 406</td>
<td>Design and Analysis of Experiments</td>
<td>3</td>
</tr>
<tr>
<td>*STAT 404</td>
<td>Statistical Computing</td>
<td>3</td>
</tr>
<tr>
<td>*STAT 482</td>
<td>Statistics Capstone</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prefix and Number</th>
<th>Prescribed Elective Courses</th>
<th>SCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>STAT 407</td>
<td>Sampling</td>
<td>3</td>
</tr>
<tr>
<td>STAT 438</td>
<td>Bayesian Statistics</td>
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</tr>
<tr>
<td>STAT 436</td>
<td>Multivariate Analysis</td>
<td>3</td>
</tr>
<tr>
<td>STAT 445</td>
<td>Applied Biostatistics</td>
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</tr>
<tr>
<td>STAT 446</td>
<td>Bioinformatics</td>
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</tr>
<tr>
<td>STAT 459</td>
<td>Categorical Data</td>
<td>3</td>
</tr>
<tr>
<td>STAT 426</td>
<td>Time Series Analysis</td>
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</tr>
<tr>
<td>STAT 485</td>
<td>Directed Study</td>
<td>3</td>
</tr>
<tr>
<td>STAT 489</td>
<td>Special Topics</td>
<td>3</td>
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<tr>
<td>STAT 491</td>
<td>Research</td>
<td>3</td>
</tr>
<tr>
<td>TBD</td>
<td>Computer Science Elective</td>
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</tr>
<tr>
<td>TBD</td>
<td>Computer Science Elective</td>
<td>4</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Foundations of Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 308</td>
<td>Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 409</td>
<td>Advanced Calculus I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 410</td>
<td>Advanced Calculus II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 417 or MATH 437</td>
<td>Numerical Methods</td>
<td>3</td>
</tr>
<tr>
<td>MATH 446</td>
<td>Principles of Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 447</td>
<td>Principles of Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 469</td>
<td>Introduction to Mathematical Biology</td>
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<tr>
<td>ISEN 314</td>
<td>Statistical Control of Quality</td>
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<tr>
<td>ISEN 420</td>
<td>Operations Research I</td>
<td>3</td>
</tr>
<tr>
<td>ISEN 421</td>
<td>Operations Research II</td>
<td>3</td>
</tr>
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<td>ISEN 424</td>
<td>Systems Simulation</td>
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</tr>
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<td>TBD</td>
<td>Specialization Elective I</td>
<td>3</td>
</tr>
<tr>
<td>TBD</td>
<td>Specialization Elective II</td>
<td>3</td>
</tr>
<tr>
<td>TBD</td>
<td>Specialization Elective III</td>
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</tr>
<tr>
<td>TBD</td>
<td>Specialization Elective IV</td>
<td>3</td>
</tr>
</tbody>
</table>
C. **Faculty**  

a. Use these tables to provide information about Core and Support faculty. Add an asterisk (*) before the name of the individual who will have direct administrative responsibilities for the program. *(Add and delete rows as needed.)*

<table>
<thead>
<tr>
<th>Name of Core Faculty and Faculty Rank</th>
<th>Highest Degree and Awarding Institution</th>
<th>Courses Assigned in Program</th>
<th>% Time Assigned To Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Alan Dabney Associate Professor</em></td>
<td>Ph.D. in Biostatistics Univ. of Washington</td>
<td>STAT 211</td>
<td>17%</td>
</tr>
<tr>
<td>James Long Assistant Professor</td>
<td>Ph.D. in Statistics Univ. of California Berkeley</td>
<td>STAT 212</td>
<td>17%</td>
</tr>
<tr>
<td>Matthias Katzfuss Assistant Professor</td>
<td>Ph.D. in Statistics The Ohio State University</td>
<td>STAT 414, STAT 415 (STAT 415 only in second year)</td>
<td>33%</td>
</tr>
<tr>
<td>Elizabeth Kolodziej Senior Lecturer</td>
<td>Ph.D. in Statistics Texas A&amp;M University</td>
<td>STAT 408 only in first two years</td>
<td>17%</td>
</tr>
<tr>
<td>Michael Longnecker Professor</td>
<td>Ph.D. in Statistics Florida State University</td>
<td>STAT 406 only in year two</td>
<td>17%</td>
</tr>
<tr>
<td>Huiyan Sang Associate Professor</td>
<td>Ph.D. in Statistics Duke University</td>
<td>STAT 404 only in year two</td>
<td>17%</td>
</tr>
<tr>
<td>Michael Sherman Professor</td>
<td>Ph.D. in Statistics Univ. of North Carolina at Chapel Hill</td>
<td>STAT 407 only in first two years</td>
<td>17%</td>
</tr>
<tr>
<td>New Faculty in Year 2018</td>
<td>Faculty member with terminal degree</td>
<td>STAT 407, STAT 408, STAT 415 beginning in year three</td>
<td>50%</td>
</tr>
<tr>
<td>New Faculty in Year 2018</td>
<td>Faculty member with terminal degree</td>
<td>STAT 436, STAT 438, STAT 459 beginning in year three</td>
<td>50%</td>
</tr>
<tr>
<td>New Faculty in Year 2019</td>
<td>Faculty member with terminal degree</td>
<td>STAT 404, STAT 406, STAT 426 beginning in year three</td>
<td>50%</td>
</tr>
<tr>
<td>New Faculty in Year 2020</td>
<td>Faculty member with terminal degree</td>
<td>Capstone, STAT 445, STAT 446 beginning in year three</td>
<td>50%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Support Faculty and Faculty Rank</th>
<th>Highest Degree and Awarding Institution</th>
<th>Courses Assigned in Program</th>
<th>% Time Assigned To Program</th>
</tr>
</thead>
</table>
b. What impact will the new program have on current programs in regards to faculty resources?
   1. How will the teaching load of current faculty be impacted?
   2. How will the teaching load of faculty assigned a portion of their time to the new program be covered?

Courses will be assigned to faculty by matching course content to faculty interests and areas of expertise. During the first two years of the program, students in the new program will take courses that are currently offered as service courses. The new faculty will teach the additional courses during the third and following years of the program. The duties of current faculty that are reassigned will be met by reducing their teaching duties in the graduate program. We anticipate that this reassignment can be managed to have a minimal effect on the graduate programs of the department. The required courses outside the Department of Statistics are existing courses on the TAMU College Station campus.

D. **Students** – Describe general recruitment efforts and admission requirements. In accordance with the institution’s Uniform Recruitment and Retention Strategy, describe plans to recruit, retain, and graduate students from underrepresented groups for the program.

Incoming students must be admitted by the College of Science, meeting the standards that their admissions require. Transfers will be required to have taken STAT 211 and 212, as well as MATH 171 and 172 or 151 and 152 with a minimum GPA of 3.0.

Academic advising will be provided by the Director of Undergraduate Programs as well as by a full-time staff member dedicated to academic advising.

One of our retired faculty members, Dr. James Matis, will be leading an AP statistics training program. This is a nationwide program, which will give us access to a large number of AP students. We will work closely with Dr. Matis to expose these students to our program.

Texas A&M College Station reports some of the highest rates in the state for persistence and graduation of students of all ethnic groups; in addition to close student advisement and counseling by the program director and faculty, the program will adopt Texas A&M’s best practices in student services and academic support for retaining and graduating students from underrepresented groups.

**We will actively recruit high school students to the program, particularly minority students.** We have established connections with the Southern Academy of Science and Technology (SAST) in Mercedes, Texas, Pharr-San Juan-Alamo (PSJA) North High School in Pharr, Texas, and Harlingen South High School in Harlingen, Texas. All three schools are located near the Mexico border. SAST is a magnet school with a current AP statistics enrollment of 25 students. Harlingen South High School currently has 45 AP statistics students. Dr. Alan Dabney will make annual trips to each school to deliver presentations and recruit for our undergraduate program. We will seek to make similar
ties with other local high schools. In addition, we will sponsor a meet-the-faculty lunch event during the TAMU math department’s annual mathematics contest in the fall.

Advisors and students at Blinn and other community colleges that have high rates of transfer into Texas A&M College Station will be informed at least annually and provided a description of the program as well as an explanation of the approved degree plan; community college staff and advisors will be provided with informational sessions so they can best advise interested students in prerequisites and other requirements of the program.

E. **Library** – Provide the library director’s assessment of library resources necessary for the program. Describe plans to build the library holdings to support the program.

No additional resources are necessary. Dr. Patricia Alford, Evans Library Information Services and Senior Lecturer provided the following information:

The TAMU Libraries collections, services, and collection-development policies are adequate to support the proposed Bachelor of Science program, as described below. In addition, the Suggest-a-Purchase and the Get It For Me document delivery / interlibrary loan programs have streamlined the acquisition, inter-library loan, and document delivery to 7-10 days for purchased or borrowed physical items, and 2-5 days for scanned digital copies of items 50 pages or fewer in length. In combination with an e-book approval plan and patron-driven e-book acquisition program, added to the conventional acquisition policies for academic books not available as e-books, the TAMU Libraries will continue to acquire most English-language, non-textbook, academic titles published in the content areas of mathematical statistics and applied statistics, adding to the more than 7,000 statistics and applied statistics titles already in the collection. TAMU has been an active partner in open-access scholarly publishing initiatives, and is a member of several consortia that maximize the buying power of our monographs acquisitions and serials subscription budgets. Despite recent state and university budget cuts that affected library budgets, TAMU Libraries was able to maintain the journal subscriptions at current levels, and did not cut any major databases having mathematics and statistics content. Changes were made in the e-book and reference titles databases and acquisitions programs from several bulk purchase “big deals” in which there was no selection of individual titles to a patron-driven acquisitions and e-book approval plan that enables single title selection and “just-in-time” purchases rather than bulk “just-in-case” purchases. TAMU has electronic access to >75% of the 160-plus titles listed as “core statistics journals” as indexed by the Current Index of Statistics (CIS) Extended database, with full electronic current and archival access as well for 86 of those titles, and partial archival access for 62 titles. In addition, the “Get It for Me” document delivery service will obtain scanned PDF copies of any requested articles for which TAMU doesn’t have online access, generally within 1-5 days. The TAMU Libraries subscribes to the ProQuest Dissertations and Theses Full-Text database, which has records and digitized or microfilm copies of most of the North American dissertations and many dissertations from international universities. More international dissertations are available full-text through the TAMU Libraries partnerships / collaborations with OCLC, the Center for Research Libraries, and the Networked Digital Library of Theses and Dissertations.

AAR/Webmasters Updated 11/30/2010
F. Facilities and Equipment – Describe the availability and adequacy of facilities and equipment to support the program. Describe plans for facility and equipment improvements/additions.

The program will use existing facilities of the Department of Statistics and the College of Science for classroom, office space, and computer labs. Facilities and equipment will be made available and adequate to conduct this program and to ensure quality in teaching and learning, and consistent with standards of similar programs in Texas and the US.

G. Accreditation – If the discipline has a national accrediting body, describe plans to obtain accreditation or provide a rationale for not pursuing accreditation.

Texas A&M is current with institutional accreditation by the Southern Association of Colleges and Schools. There are no specialized accreditation agencies currently available for undergraduate statistics.

H. Evaluation – Describe the evaluation process that will be used to assess the quality and effectiveness of the new degree program.

We will evaluate the program as a whole by evaluating our individual graduates. Each student who graduates with a bachelor of science in statistics will have acquired the knowledge and skills required to:

1. Master the depth of knowledge required for the degree. This will be evaluated by individual course exams and by our capstone project. The courses will cover the topics of statistical theory, graphical data analysis methods, statistical modeling, design of studies, calculus and linear algebra, and probability. The capstone project will require each student to have a broad understanding of the key concepts of statistical practice and be able to apply them to solve a real problem.

2. Work effectively with data. Students will be required to take two courses in computer science to learn about basic programming and database handling. In addition, STAT 404 will train the students in the use of common statistical software packages. The upper level courses in applied statistics will train the students in more specialized and advanced techniques in working with data.

3. Demonstrate critical thinking. Students will be required to think critically in many of their courses. In the capstone project, in particular, each student will be required to formulate a real-world problem in statistical terms and decide on the appropriate analysis to implement.

4. Communicate effectively. Our W and C courses will play a large role in our evaluating this outcome. In order to complete these courses, each student must demonstrate the ability to communicate statistical results both in writing and orally.

5. Practice personal and social responsibility. Our capstone course in the senior year of the program will include content on the ethics of statistical analysis. Applied statisticians often are faced with ethical challenges of how to best use the data and perform an analysis when collaborating with researchers from other disciplines.

6. Demonstrate social, cultural, and global competence. Our student body has historically been quite diverse, with recent representatives from Mexico, China,
Japan, Korea, the Middle East, and Europe. Students will have plenty of opportunities to associate with others of different backgrounds when completing their coursework, particularly when the coursework involves teamwork, as does STAT 406.

7. Prepare to engage in lifelong learning. We will encourage our students to join the American Statistical Association (ASA). We will also encourage our students to pursue accreditation as a profession statistician through the ASA’s statistician accreditation program.

8. Work collaboratively. Students will be required to work in teams in STAT 406.

In addition to the above learning outcomes for each student, we will evaluate the program as a whole by collecting data on our graduates. Specifically, we will ask our graduates a variety of questions designed to gauge how well prepared they feel with respect to specific statistical and professional skills. We will also collect data on graduates’ employment status and history after graduation.

III. Costs and Funding

**New Five-Year Costs and Funding Sources** - Use this table to show new five-year costs and sources of funding for the program. (Please refer to reference and resources at end of document in developing information)

<table>
<thead>
<tr>
<th>Five-Year Costs</th>
<th>Five-Year Funding</th>
</tr>
</thead>
<tbody>
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<td><strong>Personnel</strong></td>
<td>Reallocated Funds</td>
</tr>
<tr>
<td>Faculty</td>
<td>$990,000</td>
</tr>
<tr>
<td>Administration</td>
<td>$118,409</td>
</tr>
<tr>
<td>Graduate Assistants</td>
<td>$230,000</td>
</tr>
<tr>
<td>Clerical/Staff</td>
<td>$138,755</td>
</tr>
<tr>
<td>Other Personnel</td>
<td>$0</td>
</tr>
<tr>
<td>Facilities, Equipment &amp; IT Resources</td>
<td>$0</td>
</tr>
<tr>
<td>Supplies and Materials</td>
<td>$0</td>
</tr>
<tr>
<td>Library</td>
<td>$0</td>
</tr>
<tr>
<td>Other</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td><strong>Total Funding</strong></td>
</tr>
<tr>
<td>$1,477,164</td>
<td><strong>$776,221</strong></td>
</tr>
</tbody>
</table>

1. Report costs for reassigned faculty, new faculty hires, graduate assistants, and technical support personnel. Prorate individual salaries as a percentage of the time assigned to the program. If existing faculty will contribute to program, include costs necessary to maintain existing programs (e.g., cost of adjunct to cover courses previously taught by faculty who would teach in new program).
2. Specify other costs here (e.g., accreditation, travel).
3. Indicate formula funding for students new to the institution because of the program; formula funding should be included only for years three through five of the program and should reflect enrollment projections for years three through five.
4. Report other sources of funding here. In-hand grants, "likely" future grants, and fees can be included.
Reference and Resources for completion of proposal.

For certification on signature page.

TAC Section 5.50 (b).

(b) To be approved by the Commissioner, a proposal for a new degree program must include certification in writing from the Board of Regents of a proposing institution, in a form prescribed by the Commissioner, that the following criteria have been met:

1. The proposed degree program is within the Table of Programs previously approved by the Board for the requesting institution.

2. The curriculum, faculty, resources, support services, and other components of a proposed degree program are comparable to those of high quality programs in the same or similar disciplines offered by other institutions.

3. Clinical or in-service placements, if applicable, have been identified in sufficient number and breadth to support the proposed program.

4. The program is designed to be consistent with the standards of the Commission on Colleges of the Southern Association of Colleges and Schools, and with the standards of other applicable accrediting agencies; and is in compliance with appropriate licensing authority requirements.

5. The institution has provided credible evidence of long-term student interest and job-market needs for graduates; or, if proposed by a university, the program is appropriate for the development of a well-rounded array of basic baccalaureate degree programs at the institution where the principal faculty and other resources are already in place to support other approved programs and/or the general core curriculum requirements for all undergraduate students.

6. The program would not be unnecessarily duplicative of existing programs at other institutions.

7. Implementation and operation of the program would not be dependent on future Special Item funding.

8. New costs to the institution over the first five years after implementation of the program would not exceed $2,000,000.
Section II. C of the CB proposal asks campuses to provide information about Core and Support Faculty but does not ask for any other personnel information or any additional personnel who may be involved in the delivery of the new program. AND Section III of the proposal requests identification of personnel costs for first five-year period.

The following ‘FTE personnel’ table provides program proposal preparers an avenue to identify personnel requirements by category types, along with the types of funding sources [new costs vs. reallocated/reassigned funds from existing sources] for these personnel. The total costs from this table will provide ‘Personnel’ information costs to be included within Section III -- the ‘Five-Year Costs and Funding Sources’ table on p. 4 of the program proposal form.

### FTE Personnel Involved in Delivery of New Program

<table>
<thead>
<tr>
<th>Personnel</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Administration</td>
<td>New</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Reassignment</td>
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<td>CORE Faculty</td>
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<tr>
<td></td>
<td>Reassignment</td>
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<td>2</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>SUPPORT Faculty</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Reassignment</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Graduate Student Assts</td>
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</tr>
<tr>
<td></td>
<td>Reassignment</td>
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<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>Clerical/Other Support</td>
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</tr>
<tr>
<td></td>
<td>Reassignment</td>
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<td>.25</td>
</tr>
<tr>
<td>TOTAL</td>
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<td>1</td>
<td>1</td>
<td>5</td>
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<tr>
<td></td>
<td>Reassignment</td>
<td>1.97</td>
<td>3</td>
<td>2</td>
<td>0.5</td>
<td>7.47</td>
</tr>
</tbody>
</table>

| 5-Year TOTAL/TOTAL             | New    | 5      |        |        |        |       |
|                                | Reassignment |     |        |        |        | 7.47  |

**NOTE:** Reassignment = reallocation(s)
NEW COSTS TO THE INSTITUTION OF THE PROGRAM/ADMINISTRATIVE CHANGE  (TAMUS modified)

Complete this chart to indicate the dollar costs to the institution that are anticipated from the change requested.

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Cost Sub-Category</th>
<th>1st Year</th>
<th>2nd Year</th>
<th>3rd Year</th>
<th>4th Year</th>
<th>5th Year</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Faculty Salaries</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(New)</td>
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</tr>
<tr>
<td>(Reassignments)</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Program Administration</td>
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<td>$22,303</td>
<td>$22,972</td>
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<td>(New)</td>
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<tr>
<td>(Reassignments)</td>
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<tr>
<td>Graduate Assistants</td>
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<tr>
<td>(New)</td>
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</tr>
<tr>
<td>(Reassignments)</td>
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<td>$10,000</td>
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<td>$60,000</td>
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<td>$230,000</td>
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<td>Clerical/Staff</td>
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<td></td>
</tr>
<tr>
<td>(New)</td>
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<td>(Reassignments)</td>
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<tr>
<td>Supplies &amp; Materials</td>
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</tr>
<tr>
<td>Library</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Equipment &amp; IT Resources**</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Facilities</td>
<td></td>
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</tr>
<tr>
<td>Other (Identify)</td>
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</tr>
<tr>
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<td>$348,661</td>
<td>$470,721</td>
<td>$582,507</td>
<td>$1,477,164</td>
</tr>
</tbody>
</table>

AAR/Webmasters Updated 11/30/2010
New Program Request Form for
Bachelor’s and Master’s Degrees
Page 14
ANTICIPATED SOURCES OF FUNDING   *Note:* Use this chart to indicate the dollar amounts anticipated from various sources. Use the additional explanation section that follows this page to specify as completely as possible each non-formula funding source.

<table>
<thead>
<tr>
<th>Funding Category</th>
<th>1st Year</th>
<th>2nd Year</th>
<th>3rd Year</th>
<th>4th Year</th>
<th>5th Year</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Formula Income*</td>
<td></td>
<td></td>
<td>$174,331</td>
<td>$235,361</td>
<td>$291,254</td>
<td>$700,946</td>
</tr>
<tr>
<td>II. Other State Funding*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>III. Reallocation of Existing Resources*</td>
<td>$32,303</td>
<td>$42,972</td>
<td></td>
<td></td>
<td></td>
<td>$75,275</td>
</tr>
<tr>
<td>IV. Federal Funding* (In-hand only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V. Other Funding*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>$32,303</td>
<td>$42,972</td>
<td>$174,331</td>
<td>$235,361</td>
<td>$291,254</td>
<td>$776,221</td>
</tr>
</tbody>
</table>

*For more information, please refer to the accompanying *Anticipated Sources of Funding: Explanatory Notes and Examples*
### NON-FORMULA SOURCES OF FUNDING

*Note: Use this form to specify as completely as possible each of the non-formula funding sources for the dollar amounts listed on the reverse side of this form.*

<table>
<thead>
<tr>
<th>Funding Category</th>
<th>Non-Formula Funding Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>II. Other State Funding</strong></td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
<tr>
<td><strong>III. Reallocation of Existing Resources</strong></td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
<tr>
<td><strong>IV. Federal Funding</strong></td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
<tr>
<td><strong>V. Other Funding</strong></td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
</tbody>
</table>
I. Formula Income
   A. The first two years of any new program should not draw upon formula income to pay for the program.
   B. For each of Years 3 through 5, enter the smaller of:
      1. the new formula income you estimate the program would generate, based on projected enrollments and formula funding rates; or
      2. half of the estimated program cost for that year.
   C. Because enrollments are uncertain and programs need institutional support during their start-up phase, it is the Coordinating Board’s policy to require institutions to demonstrate that they can provide:
      1. sufficient funds to support all the costs of the proposed program for the first two years (when no new formula funding will be generated); and
      2. half of the costs of the new program during years three through five.
   D. When estimating new formula income, institutions should take into account the fact that students switching programs do not generate additional formula funding to the institution. For example, if a new master’s program has ten students, but five of them switched into the program from existing master’s programs at the institution, only five of the students will generate new formula income to help defray the costs of the program.

II. Other State Funding
    This category could include special item funding appropriated by the legislature, or other sources of funding from the state that do not include formula-generated funds (e.g., HEAF, PUF, etc.).

III. Reallocation of Existing Resources:
    If faculty in existing, previously budgeted positions is to be partially or wholly reallocated to the new program, you should explain in the text of your proposal how the institution will fulfill the current teaching obligations of those faculty and include any faculty replacement costs as program costs in the budget.

IV. Federal Funding
    Only federal monies from grants or other sources currently in hand may be included. Do not include federal funding sought but not secured. If anticipated federal funding is obtained, at that time it can be substituted for funds designated in other funding categories. Make note within the text of the proposal of any anticipated federal funding.

V. Other Funding
    This category could include Auxiliary Enterprises, special endowment income, or other extramural funding.
Certification Form for New Bachelor’s and Master’s Programs
Texas Higher Education Coordinating Board

Directions: An institution shall use this form to request a new bachelor’s or master’s degree program that meets all criteria for automatic approval in Coordinating Board Rules, Chapter 5, Subchapter C, Section 5.44: (a) The program has institutional and governing board approval; (b) the program complies with the Standards for Bachelor’s and Master’s Programs; (c) adequate funds are available to cover the costs of the new program; (d) new costs during the first five years of the program will not exceed $2 million; (e) the program is a non-engineering program (i.e., not classified under CIP code 14); and (f) the program will be offered by a university or health-related institution.

If a new bachelor’s or master’s program does not meet the criteria above, an institution must submit a request using the Form for Requesting a New Bachelor’s and Master’s Degree Program.

Information: Contact the Division of Academic Affairs and Research at 512/427-6200 for more information.

Administrative Information

1. Institution:
   Texas A&M University.

2. Program Name: Show how the program would appear on the Coordinating Board’s program inventory (e.g., Bachelor of Business Administration degree with a major in Accounting; Bachelor of Arts in Interdisciplinary Studies with 4-8 ESL Generalist Certification).

   Bachelor of Science with a major in Statistics.

3. Proposed CIP Code: 27.0501.0001

4. Number of Required Semester Credit Hours (SCHs) (If the number of SCHs exceeds 120 for a bachelor’s program, the institution must request a waiver documenting the compelling academic reason for requiring more SCHs):

   120.

5. Administrative Unit: Identify where the program would fit within the organizational structure of the university (e.g., The Department of Electrical Engineering within the College of Engineering).

   The Department of Statistics within the College of Science.

6. Delivery Mode: Identify how and where the program would be delivered, e.g. on-campus face-to-face, online, off-campus, interactive videoconferencing, hybrid, etc.

   On-campus face-to-face.

7. Implementation Date: Report the first semester and year that students would enter the program.

   Fall 2016.

8. Contact Person: Provide contact information for the person who can answer specific questions about the program.
Signature Page

I hereby certify that all of the following criteria have been met in accordance with the procedures outlined in Coordinating Board Rules, Chapter 5, Subchapter C, Section 5.44:

(a) The program has institutional approval.

(b) The program complies with the Standards for Bachelor's and Master's Programs.

(c) Adequate funds are available to cover the costs of the new program.

(d) New costs during the first five years of the program will not exceed $2 million.

(e) The program is a non-engineering program (i.e., not classified under CIP code 14).

(f) The program will be offered by a university or health-related institution.

I understand that the Coordinating Board will update the program inventory for the institution if no objections to the proposed program are received during the 30-day public comment period.

__________________________________________
Chief Executive Officer Date

I hereby certify that the Board of Regents has approved this program.

Date of Board of Regents approval: ____________________________

__________________________________________
Board of Regents (or Designee) Date
AGENDA ITEM BRIEFING

Submitted by: Mark Hussey, President/CEO
Texas A&M University

Subject: Approval of a New Bachelor of Science Degree Program with a Major in Statistics and Authorization to Request Approval from the Texas Higher Education Coordinating Board

Proposed Board Action:

Approve the establishment of a new degree program at Texas A&M University leading to a Bachelor of Science Degree Program with a Major in Statistics, authorize the submission of this degree program to the Texas Higher Education Coordinating Board (THECB) for approval and certify that all applicable THECB criteria have been met.

Background Information:

Statisticians are in demand in all sectors of society. The Bureau of Labor Statistics reports strong recent growth in the field as well as “much faster than average” job growth in the near future. Job search sites list numerous openings for statisticians and related data analysts. In 2014, LinkedIn published a list of the job skills in highest demand, with statistical analysis and data mining being the top entry. McKinsey Global Institute published a study in 2011 that forecast a substantial shortage in data analysts in the next 15 years.

In addition to the job market need, undergraduate training in statistics is in high demand among students. The number of students taking the Advanced Placement (AP) Statistics exam has increased dramatically in the past few years, with enrollment in this exam increasing at one of the highest rates of all disciplines. Existing undergraduate programs in statistics have seen rapid increases in enrollment, with the enrollment in some programs more than doubling in the past five years. Eleven of the fifteen Vision 2020 Peer Institutions offer undergraduate degrees in statistics. While there are a handful of undergraduate programs in statistics at smaller Texas institutions, a program at Texas A&M University would be the largest by far.

A&M System Funding or Other Financial Implications:

The program will use existing facilities of the Department of Statistics and the College of Science for classroom, office space, and computer labs. Courses will be assigned to faculty by matching course content to faculty interests and areas of expertise. During the first two years of the program, students in the new program will take courses that are currently offered as service courses. The new faculty will teach the additional courses during the third and following years of the program. The duties of current faculty that are reassigned will be met by reducing their teaching duties in the graduate program. We anticipate that this reassignment can be managed to have a minimal effect on the graduate programs of the department. The required courses outside the Department of Statistics are existing courses on the TAMU College Station campus.
Agenda Item No.

TEXAS A&M UNIVERSITY
Office of the President
Date of Submission

Members, Board of Regents
The Texas A&M University System

Subject: Approval of a New Bachelor of Science Degree Program with a Major in Statistics, and Authorization to Request Approval from the Texas Higher Education Coordinating Board

I recommend adoption of the following minute order:

“The Board of Regents of The Texas A&M University System approves the establishment of a new degree program at Texas A&M University leading to a Bachelor of Science degree with a major in Statistics.

The Board also authorizes submission of Texas A&M University’s new degree program request to the Texas Higher Education Coordinating Board for approval and hereby certifies that all applicable criteria of the Coordinating Board have been met.”

Respectfully submitted,

Mark A. Hussey
Interim President
Texas A&M University

Approval Recommended: Approved for Legal Sufficiency:

__________________________________________
John Sharp
Chancellor

__________________________________________
Ray Bonilla
General Counsel

__________________________________________
Billy Hamilton
Executive Vice Chancellor and Chief Financial Officer

__________________________________________
James R. Hallmark, Ph.D.
Vice Chancellor for Academic Affairs
Texas A&M University

Bachelor of Science
with a major in Statistics
(CIP 27.0501.0001)

Program Review Outline

BACKGROUND & PROGRAM DESCRIPTION

Administrative Unit: Department of Statistics, College of Science

1st paragraph – Unique details about the program that is not captured in any other section – that is pertinent to the request

Beyond what it described below, there are no special requests or unique details about the program.

2nd – Educational objectives

The educational objectives of the new program are: master the depth of knowledge required for the degree; work effectively with data; demonstrate critical thinking; communicate effectively; practice personal and social responsibility; demonstrate social, cultural, and global competence; prepare to engage in lifelong learning; work collaboratively. Evaluation will be done via performance metrics on required coursework, in addition to data we will collect on the students after they have completed the program. For more details, see the main proposal document.

3rd or later – curriculum requirements; unique special requirements

The program curriculum will include existing courses in the Departments of Statistics, Mathematics, Computer Science and Engineering, and Industrial and Systems Engineering. In addition, the Department of Statistics will develop ten new courses for the program.

The proposed implementation date is fall 2016.

Texas A&M University certifies that the proposed new degree program meets the criteria under the 19 Texas Administrative Code, Section 5.45 in regards to need, quality, financial and faculty resources, standards and costs. New costs during the first five years will not exceed $2 million.

I. NEED

A. Employment Opportunities

Statisticians are in demand in all sectors of society. Statisticians use statistical methods to collect and analyze data and help solve real-world problems in business, engineering, the sciences, and other fields. Nearly every agency in the federal government employs statisticians.

Biostatisticians work in pharmaceutical companies, public health agencies, and hospitals. In
business, statisticians design experiments for product testing and development. Actuaries use mathematics, statistics, and financial theory to study uncertain future events, especially those of concern to insurance and pension companies.

In a 2009 NY Times article, statistics was cited as being a rapidly expanding field, with employers such as Google and IBM hiring increasing numbers from the field. “I keep saying that the sexy job in the next 10 years will be statisticians. And I’m not kidding.” Hal Varian, chief economist at Google. “Data availability is going to continue to grow. To make that data useful is a challenge. It’s generally going to require human beings to do it,” according to Dr. Varian.


According to the Bureau of Labor Statistics, there were 24,950 workers classified as statisticians in 2013. This represents a 21% increase in the five years since 2008. The field was projected to grow by a further 27% (classified by BLS as “much faster than average”) during 2012 – 2022.

http://www.bls.gov/oes/2013/may/oes152041.htm
http://www.bls.gov/oco/mats/statisticians.htm

The Texas Workforce Commission currently lists 500 jobs with the keyword of “statistics” (searched July 11, 2014). According to The Wall Street Journal’s Numbers Guy, Carl Bialik, as of March 2013, there were 28,305 postings for jobs in statistics, analytics, and “big data” at the jobs website Indeed.com; this was up from 16,500 three years earlier.

http://online.wsj.com/articles/SB10001424127887323478304578332850293360468

McKinsey Global Institute published a study in May 2011 entitled “Big Data: The next frontier for innovation, competition, and productivity” that predicts “by 2018 the US will have a shortage of 140,000 – 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with know-how to use the analysis of big data to make effective decisions.”

http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation

In December 2014, LinkedIn published a list of the year’s “hottest skills” for recruiting on the site. Statistical analysis and data mining was listed as number one.

http://talent.linkedin.com/blog/index.php/2014/12/the-25-hottest-skills-to-recruit-for-on-linkedin

B. Projected Enrollment

We anticipate enrollments of 25, 45, 55, 60, and 65 students in the first five years, respectively. At steady state, we expect annual enrollments of 65 students, for an approximate total of 260 students in the program.

C. Existing State Programs

Rice University, Baylor University, the University of Texas at San Antonio, Southern Methodist University, and the University of Houston-Downtown all offer B.S. degrees in statistics. However, the Department of Statistics at Texas A&M would be the only large statistics department in Texas to offer a B.S. degree in statistics. The Department of Mathematics already offers an Applied Mathematical Sciences (APMS) degree that offers specialization in, among other things, statistics. However, there are very few students in the statistics track (5 or fewer a year), so we expect the vast majority of students pursuing a statistics degree to be new students.
II. QUALITY & RESOURCES

A. Faculty

The Department of Statistics has an adequate number of faculty for teaching the program’s courses in the first two years, since many elective courses will not be needed in the first two years of the program. Rather, during the first two years of the program, students in the new program will take courses that are currently offered as service courses. We have requested new faculty positions, to begin in the third year, and these new faculty will be responsible for teaching the remaining elective courses.

Courses will be assigned to faculty by matching course content to faculty interests and areas of expertise. The duties of current faculty that are reassigned will be met by reducing their teaching duties in the graduate program. We anticipate that this reassignment can be managed to have a minimal effect on the graduate programs of the department. The required courses outside the Department of Statistics are existing courses on the TAMU College Station campus.

B. Program Administration

Academic advising will be provided by the Director of Undergraduate Programs as well as by a new full-time staff member dedicated to academic advising. An existing staff member will have one quarter of their time reassigned to assist with administrative tasks for the program.

C. Other Personnel

None.

D. Supplies, Materials

No special supplies or materials will be necessary.

E. Library

No additional library resources will be necessary.

F. Equipment, Facilities

The program will use existing facilities of the Department of Statistics and the College of Science for classroom, office space, and computer labs. Facilities and equipment will be made available and adequate to conduct this program and to ensure quality in teaching and learning, and be consistent with standards of similar programs in Texas and the US.

G. Accreditation

Texas A&M is current with institutional accreditation by the Southern Association of Colleges and Schools. There are no specialized accreditation agencies currently available for undergraduate statistics.
### III. NEW 5 YEAR COSTS & FUNDING SOURCES

<table>
<thead>
<tr>
<th>NEW FIVE-YEAR COSTS</th>
<th>SOURCES OF FUNDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td>Formula Income</td>
</tr>
<tr>
<td>$990,000</td>
<td>$700,946</td>
</tr>
<tr>
<td>Program Administration</td>
<td>Statutory Tuition</td>
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<tr>
<td>$118,409</td>
<td>Reallocation</td>
</tr>
<tr>
<td>Graduate Assistants</td>
<td>Designated Tuition</td>
</tr>
<tr>
<td>$230,000</td>
<td>$75,275</td>
</tr>
<tr>
<td>Supplies &amp; Materials</td>
<td>Other Funding:</td>
</tr>
<tr>
<td>Library &amp; IT Resources</td>
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<tr>
<td>Equipment, Facilities</td>
<td>List other funding</td>
</tr>
<tr>
<td>Other</td>
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<tr>
<td>$138,755</td>
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<tr>
<td><strong>Estimated 5-Year Costs</strong></td>
<td><strong>Estimated 5-year Revenues</strong></td>
</tr>
<tr>
<td>$1,477,164</td>
<td>$776,221</td>
</tr>
</tbody>
</table>
INFORMATION ONLY
March 27, 2015

MEMORANDUM

TO: Undergraduate Curriculum Committee

FROM: College of Agriculture and Life Sciences
        Department of Nutrition and Food Science

SUBJECT: Request to Include Zero Credit Hour in Existing Courses

The College of Agriculture and Life Sciences, Department of Nutrition and Food Science, requests the following existing courses to be changed to include a zero credit hour option effective 201531. No other changes are being made to the courses.

<table>
<thead>
<tr>
<th>Department Name</th>
<th>Course Number/Title</th>
<th>Existing Credit Hours</th>
<th>Proposed Credit Hours</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition and Food Science</td>
<td>FSTC 285 Directed Studies</td>
<td>1-4</td>
<td>0-4</td>
<td>Zero credit option will be used to track first &amp; second year student participation in directed studies</td>
</tr>
<tr>
<td>Nutrition and Food Science</td>
<td>FSTC 291 Research</td>
<td>1-4</td>
<td>0-4</td>
<td>Zero credit option will be used to track first &amp; second year student participation in undergraduate research</td>
</tr>
<tr>
<td>Nutrition and Food Science</td>
<td>FSTC 485 Directed Studies</td>
<td>1-4</td>
<td>0-4</td>
<td>Zero credit option will be used to track third &amp; fourth year student participation in directed studies</td>
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<tr>
<td>Nutrition and Food Science</td>
<td>FSTC 491 Research</td>
<td>1-4</td>
<td>0-4</td>
<td>Zero credit option will be used to track third &amp; fourth year student participation in undergraduate research</td>
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<td>Nutrition and Food Science</td>
<td>NUTR 285 Directed Studies</td>
<td>1-4</td>
<td>0-4</td>
<td>Zero credit option will be used to track first &amp; second year student participation in directed studies</td>
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<td>0-4</td>
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</tr>
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</table>

600 John Kimbrough Blvd., Suite 515
2402 TAMU
College Station, TX 77843-2402

Phone 979-845-3712
aglifesciences.tamu.edu
TO: Undergraduate Curriculum Committee

FROM: College of Agriculture and Life Sciences, Department of Biological and Agricultural Engineering

DATE: March 27, 2015

SUBJECT: Request to Include Zero Credit Hours in Existing Courses

The College of Agriculture and Life Sciences, Department of Biological and Agricultural Engineering, requests the following existing courses to be changed to include a zero credit hour option effective 201531. No other changes are being made to the courses.

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<tr>
<th>Department Name:</th>
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<th>Proposed Credit Hours</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological and Agricultural Engineering</td>
<td>BAEN 291 Research</td>
<td>1-3</td>
<td>0-3</td>
<td>Zero credit option will be used to track first year and second year student participation in student research</td>
</tr>
<tr>
<td>Biological and Agricultural Engineering</td>
<td>BAEN 285 Directed Studies</td>
<td>1-4</td>
<td>0-4</td>
<td>Zero credit option will be used to track first year and second year student participation in directed studies. *Special sections for internships.</td>
</tr>
<tr>
<td>Biological and Agricultural Engineering</td>
<td>BAEN 491 Research</td>
<td>1-3</td>
<td>0-3</td>
<td>Zero credit option will be used to track third and fourth year student participation in student research</td>
</tr>
<tr>
<td>Biological and Agricultural Engineering</td>
<td>BAEN 485 Directed Studies</td>
<td>1-4</td>
<td>0-4</td>
<td>Zero credit option will be used to track third and fourth year student participation in directed studies. *Special sections for internships.</td>
</tr>
<tr>
<td>Biological and Agricultural Engineering</td>
<td>AGSM 291 Research</td>
<td>1-3</td>
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Stephen Searcy Ph.D., P.E.
Professor and Department Head
Department of Biological and Agricultural Engineering

201 Scoates Hall
2117 TAMU
College Station, TX 77843-2117

Tel. 979.845.3931 Fax 979.862.3442
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