MSCI 650: Foundations of Clinical and Translational Research

In Workflow
1. CLMD Department Head
2. Curricular Services Review
3. MD Committee Chair GR
4. MD College Dean
5. GC Preparer
6. GC Chair
7. Faculty Senate Preparer
8. Faculty Senate
9. Provost II
10. President
11. Curricular Services
12. Banner

Approval Path
1. 08/22/18 12:38 pm
   Emily Wilson (emilyw):
   Approved for CLMD Department Head
2. 08/24/18 8:39 am
   Terra Bissett (t.bissett):
   Rollback to Initiator
3. 11/14/18 11:58 am
   Bill Griffith (wgriff):
   Approved for CLMD Department Head
4. 11/14/18 2:39 pm
   Sandra Williams (sandra-williams):
   Rollback to Initiator
5. 05/01/19 5:41 pm
   Jim Samuel (jamuel):
   Approved for CLMD Department Head
6. 05/06/19 4:26 pm
   Terra Bissett (t.bissett):
   Rollback to Initiator
7. 05/08/19 4:12 pm
   Bill Griffith (wgriff):
   Approved for CLMD Department Head
8. 05/13/19 2:03 pm
   Terra Bissett (t.bissett):
   Rollback to Initiator
9. 05/13/19 3:35 pm
   Bill Griffith (wgriff):
   Approved for CLMD Department Head
10. 05/13/19 4:56 pm
    Terra Bissett (t.bissett):
    Approved for Curricular Services Review
MSCI 650: Foundations of Clinical and Translational Research

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>David P Huston MD</td>
<td><a href="mailto:dhuston@medicine.tamhsc.edu">dhuston@medicine.tamhsc.edu</a></td>
<td>713-677-8100</td>
</tr>
</tbody>
</table>

Course prefix MSCI  
Course number 650  
Department College of Medicine  
College/School Medicine  
Academic Level Graduate  
Effective term Fall 2020  
Complete Course Title Foundations of Clinical and Translational Research  
Abbreviated Course Title FDTNS CLINICAL & TRANSLTNL RES

Catalog course description Clinical and translational research expertise; topics include Clinical Research and Design, Social and Behavioral Aspects of Clinical Research, Healthcare Quality and Safety, Epidemiology Research, Use of Computers in Research, and Bioinformatics in Research.

Prerequisites and Restrictions Approval of course director.

Should catalog prerequisites / concurrent enrollment be enforced? No

Crosslistings No  
Stacked No  
Semester 2  
Credit Hour(s) 2  
Contact Hour(s) (per week): Lecture 2  
Lab 0  
Other 0  
Total 2

Repeatable for credit? Yes

Number of times repeated for credit - OR - Maximum number of hours 12

When will this course be repeated? Within a student’s career

CIP/Fund Code 2699992600  
Default Grade Mode Letter Grade (G)  
Method of instruction Lecture  
Will this course be taught at another No
branch?

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education)

No

Will this course be taught as a distance education course?

No

Is 100% of this course going to be taught in Texas?

Yes

Will classroom space be needed for this course?

No

This will be a required course or an elective course for the following programs:

Required (select program)  Program(s)

(MS-MDSC) Master of Science in Medical Sciences

Elective (select program)  Program(s)

(MS-BIMS) Master of Science in Biomedical Sciences

Course Syllabus

Syllabus: Upload syllabus


Letters of support or other documentation

No

Additional information

This course is 2 credit hours in each semester: fall, spring, and summer.

Reviewer Comments

Terra Bissett (t.bissett) (08/24/18 8:39 am): Rollback: Please submit request using the 689 special topics course.

Sandra Williams (sandra-williams) (11/14/18 2:39 pm): Rollback: Lab contact hours should be 2 or 3 to equal 1 SCH. Syllabus hours do not match hours on form. Syllabus has old ADA statement (Cain Hall). Missing grading scale and grade weights.

Terra Bissett (t.bissett) (05/06/19 4:22 pm): Edits made to catalog course description to comply with catalog style guide.

Terra Bissett (t.bissett) (05/06/19 4:26 pm): Rollback: Please clarify the Semester Credit Hours of this course. Syllabus show 2 Credit Hours: Fall and Spring, 1 Credit Hour: Summer; Is this course actually 3 Semester Credit Hours?

kfranks (05/08/19 4:03 pm): This course is 2 credit hours in fall, 2 credit hours in spring, and 1 credit hour in summer semester.

Terra Bissett (t.bissett) (05/13/19 2:03 pm): Rollback: Rolling back as requested.

kfranks (05/13/19 3:35 pm): Correction to previous: Course is 2 credit hours in each semester: fall, spring, and summer.

Terra Bissett (t.bissett) (05/13/19 4:54 pm): Updates received.
Course title and number  Foundations of Clinical & Translational Research / MSCI 650
Term (e.g., Fall 200X)  2 Credit Hours:  Fall, Spring, Summer
Meeting times and location  Wednesdays 5:00-6:30 pm / UTHSC-H MSB 2.135

Course Description and Prerequisites

COURSE DESCRIPTION: In association with the Center for Clinical Research and Evidence-Based Medicine at the University of Texas Health Science Center-Houston, this lecture series is part of the Clinical Research Curriculum designed to promote clinical and translational research expertise; fall topics include Clinical Research and Design; spring topics include Social and Behavioral Aspects and Healthcare Quality and Safety; summer topics include Epidemiology Research and Translational Research as well as Use of Computers in Medicine, including specialty software; and in addition to weekly lectures, regular meetings with Dr. Huston are required.

PREREQUISITES: Permission of Course Director.

Learning Outcomes

Obtain proficiency in clinical and translational research techniques and methods, and identify various research opportunities and know how to get started in clinical research; become familiar with tools used to conduct clinical research and understand how to interpret test results, and identify rules of evidence and demonstrate critical evaluation of medical literature; become familiar with principles of clinical research involving human subjects and identify the bridges of basic science and patient-based research; be able to build a clinical research proposal to develop study design and have a good understanding of molecular technologies needed to conduct clinically relevant translational research; and learn statistical software to search databases, manage data, and analyze data sets to conduct clinical research studies.

Instructor Information

Name  David P. Huston, M.D.
Telephone number  (713) 677-8100
Email address  dhuston@medicine.tamhsc.edu
Office hours  9:00 am - 5:00 pm
Office location  Texas A&M COM, 2121 W. Holcombe Blvd. Room 1111, Houston TX 77030-3303

Textbook and/or Resource Material

COURSE TEXTBOOK: None required.

COURSE SOFTWARE: Stata (at least version 11) is required for coursework. Stata 14 is strongly recommended for those who plan to take the advanced courses. Stata is available at discounted pricing for students and teaching faculty.

For Students Only (student ID not required but must use .edu email address):
Stata/IC 14 - ~$150.00 for one-year license, ~$225 for perpetual licensee.
Small Stata 14 - (for “students” only, can only accommodate smaller data sets, adequate for the Introductory course but not the Advanced courses) - ~$40 for six-month license, ~$60 for one-year license, ~$100 for perpetual license.

For Students and Faculty (must use .edu email address):
Stata/IC 14 - ~$225.00/perpetual license.

Be sure to include your .edu email address when ordering.
**Attendance Policy and Grading Scale**

Students will receive a letter grade based on exams, proposal/project, class attendance and participation.

- **Attendance Policy:**

  “The University views class attendance as the responsibility of an individual student. Attendance is essential to complete the course successfully. University rules related to excused and unexcused absences are located on-line at [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07)."

- **Grading Scales:**

  *Standard Letter Grading Scale:*

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

  *Grading Assignment (standard letter grading scale):*

  - Two in-class exams: 15 points each (30 points of final grade)
  - Three take-home assignments: 10 points each (30 points of final grade)
  - Course summary project: 20 points of final grade
  - Attendance and participation: 20 points of final grade

**Attendance and Make-up Policies**

In-class attendance for all lectures with exception of up to 2 absences.

In accordance with Texas A&M attendance and make-up policies, please refer to the website link to Student Rule 7 at [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07).

**Course Topics, Calendar of Activities, Major Assignment Dates**

Special Topics in Clinical Research 1 is a two-year revolving course. A series of programs and lectures along with computer and specialty software courses make up the curriculum.

Enroll by registering for the class for credit.

Completion of Stata online tutorial ([https://med.uth.edu/crebm/clinical-research-education/crca-computer-course](https://med.uth.edu/crebm/clinical-research-education/crca-computer-course)).

In-class attendance for at least 75% of the lectures, must sign in to get credit. Attendance at remaining lectures by videotape/videostream, with email confirmation after viewing.

Completion of all homework assignments and tests within 2 weeks after the due date assigned, unless prior arrangements are made in writing (by email) with course instructor.

Average score of at least 80% on take-home exams.

Completion of the final exam and all other coursework, unless permission granted in writing (email) in advance by course instructor.
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Required Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-15</td>
<td>Introduction to Clinical Research</td>
<td>Assigned</td>
</tr>
<tr>
<td>16-25</td>
<td>Literature Appraisal</td>
<td>Assigned</td>
</tr>
<tr>
<td>26-33</td>
<td>Ethical Aspects of Clinical Research</td>
<td>Assigned</td>
</tr>
<tr>
<td>34-39</td>
<td>Introduction to Translational Research</td>
<td>Assigned</td>
</tr>
<tr>
<td>40-51</td>
<td>Clinical Research Design I (tandem)</td>
<td>Assigned</td>
</tr>
<tr>
<td>41-51</td>
<td>Translational Research Work (tandem)</td>
<td>Assigned</td>
</tr>
<tr>
<td>52-61</td>
<td>Introduction to Epidemiology Research</td>
<td>Assigned</td>
</tr>
<tr>
<td>62</td>
<td>Social and Behavioral Aspects of Clinical Research</td>
<td>Assigned</td>
</tr>
<tr>
<td>63-76</td>
<td>Clinical Trial Design</td>
<td>Assigned</td>
</tr>
<tr>
<td>77</td>
<td>Academic Success as a Clin/Trans Investigator</td>
<td>Assigned</td>
</tr>
<tr>
<td>78-84</td>
<td>Healthcare Quality and Safety</td>
<td>Assigned</td>
</tr>
<tr>
<td>85-96</td>
<td>Clinical Research Design II</td>
<td>Assigned</td>
</tr>
<tr>
<td>97-104</td>
<td>Bioinformatics in Research</td>
<td>Assigned</td>
</tr>
<tr>
<td>Flexible</td>
<td>Use of Computers in Clinical Research</td>
<td>Assigned</td>
</tr>
</tbody>
</table>

Other Pertinent Course Information

COURSE STRUCTURE: Weekly lecture discussions will be held as part of the Center for Clinical Research and Evidence-Based Medicine lecture series offered every Wednesday evening; responsible for material covered in lectures, any assigned reading, and for discussing each case that is presented; responsible for all assignments, tests, and projects that are assigned during the seminar series; and in addition to materials covered, regular meetings with Dr. Huston are required to discuss topics presented and to develop a proposal.

Other Pertinent Information

Policies and Procedures (generic information for all campuses)

Professionalism and Ethics: Students are expected to uphold and adhere to ethical and behavioral standards of the profession of medicine. Information/sources on ethics in pediatrics and general medicine are included below.

Resources: Texas A&M Health Science Center Medical Student Handbook
AMA Principle of Medical Ethics at [www.ama-assn.org/ama/pub/category/2512.html](http://www.ama-assn.org/ama/pub/category/2512.html)

Dress and Appearance: In order to be accepted as a member of the team, it is important to assume the same basic manner of dress, appearance and conduct as the other members of the team. A picture name identification tag must be readily visible on your shirt or coat collar, with introduction of your full name including “Ms.” or “Mr.” or “medical student”. If the parent/patient/healthcare professional refers to the student as a “doctor”, it is the student’s duty to correct this error. One should not misrepresent his/her role. Remembering that you are serving as a role model should help one determine an appropriate appearance.

Resource: Texas A&M Health Science Center Medical Student Handbook.

ADA and Academic Integrity Statements

- Americans with Disabilities Act (ADA) Policy Statement

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

- **Academic Integrity Statement and Policy**

  “An Aggie does not lie, cheat or steal, or tolerate those who do.” For additional information, please visit: http://aggiehonor.tamu.edu.

**College of Medicine**

**Professionalism and integrity Statement (Academic Honesty and Plagiarism)**

All College of Medicine students are required to comply with the student code of conduct and the academic integrity and honesty standards published in each component’s Student Handbook. Disciplinary action will be taken in accordance with the policies of each component. Students found guilty of Academic Dishonesty will receive an “F”/Unsatisfactory in the course. For a full list of actions qualifying as academic dishonesty, please review the College of Medicine Student Handbook at http://medicine.tamhsc.edu/student-affairs/docs/handbook.pdf.

According to the Aggie Honor System Office, plagiarism is defined as the appropriation of another person’s ideas, processes, results, or words without giving appropriate credit. Intentionally, knowingly, or carelessly presenting the work of another as one’s own (i.e., without crediting the author or creator). Plagiarism and other academic misconduct definitions can be viewed on the Aggie Honor System Office website; http://aggiehonor.tamu.edu/RulesAndProcedures/HonorSystemRules.aspx#definitions.

**E-mail Access and FERPA**

The College of Medicine is communicating all official information to students through the students’ TAMHSC e-mail accounts. Please check the account frequently during the semester for updates. This course is supported with web-based and/or e-mail activities. In order to take advantage of these additional resources and participate fully in the course, you have been assigned an e-mail address by the Texas A&M Health Science Center. This e-mail address is for internal use only, so that faculty may communicate with you and the entire class. By registering for this course, you are agreeing to allow your classmates to have access to this e-mail address. Should you have any questions, please contact the TAMU’s Office of the Registrar at 979-845-1031.

The Family Educational Rights and Privacy Act of 1974 (FERPA), which the HSC complies fully, is intended to protect the privacy of education records, to establish the rights of students to inspect and review their education records and to provide guidelines for the correction of inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with the Family Educational Rights and Privacy Act Office of the Department of Education in Washington, D.C., concerning alleged failures by the HSC to comply with the act.

**Mistreatment of Students**

The College of Medicine is committed to providing a positive learning environment in which students can meet their academic goals based on mutual respect in the teacher/learner relationship. Both parties must be sensitive to the needs of others and differences in gender, race, sexual orientation, religion, age or disability. As outlined in the Student Handbook under the section titled Standards of Conduct in the Teacher-Learner Relationship, belittlement, intimidation and humiliation are unacceptable for effective learning and undermine self-esteem. Breaches involving student mistreatment may result in a faculty or staff member being sanctioned or the loss of faculty and/or staff appointment. These policies address student mistreatment involving College of Medicine employees, residents, affiliate staff, or patients. Mistreatment may be reported through the College of Medicine telephone hotline, 1-855-397-9835 or through an online form at http://medicine.tamhsc.edu/current/student-mistreatment-form.html. For a full list of reporting avenues, please refer to the Student Handbook under the Mistreatment Policy.

**Exposure and Occupational Hazard**

The Needle Stick Policy and Bloodborne Pathogen Exposure information for Medical Students may be accessed in the Student Handbook at: http://medicine.tamhsc.edu/student-affairs/docs/handbook.pdf
Note: More information is available on the aforementioned topics to all students on the College of Medicine website.
# Course Change Request

## New Course Proposal

**Viewing:** MSCI 684: Professional Internship  
**Date Submitted:** 05/01/19 9:20 am  
**Last edit:** 05/01/19 9:20 am  
**Changes proposed by:** wezimmer

### Contact(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warren Zimmer</td>
<td><a href="mailto:wezimmer@medicine.tamhsc.edu">wezimmer@medicine.tamhsc.edu</a></td>
<td>979-436-0752</td>
</tr>
</tbody>
</table>

### Approval Path

1. 04/24/19 4:48 pm  
   Bill Griffith (whgriff): Approved for CLMD Department Head
2. 05/01/19 9:14 am  
   Terra Bissett (t.bissett): Rollback to Initiator
3. 05/01/19 10:05 am  
   Bill Griffith (whgriff): Approved for CLMD Department Head
4. 05/01/19 4:26 pm  
   Terra Bissett (t.bissett): Approved for Curricular Services Review
5. 05/15/19 2:01 pm  
   Warren Zimmer (wezimmer): Approved for MD Committee Chair GR
6. 06/04/19 11:50 am  
   Amy Waer (awaer): Approved for MD College Dean
7. 06/10/19 2:17 pm  
   Cherisse Castille (cherisse.castille): Approved for GC Preparer
8. 06/25/19 9:52 am  
   LaRhesa Johnson (ljohnson): Approved for GC Chair
Course prefix: MSCI  
Course number: 684  
Department: College of Medicine  
College/School: Medicine  
Academic Level: Graduate  
Effective term: Fall 2020  
Complete Course Title: Professional Internship  
Abbreviated Course Title: PROFESSIONAL INTERNSHIP

Catalog course description: A directed internship in an organization to provide students with on-the-job training with professionals in settings appropriate to the student's career objectives.

Prerequisites and Restrictions: Doctoral classification; approval of advisory committee chair and the director of graduate studies.

Should catalog prerequisites / concurrent enrollment be enforced? No

Crosslistings: No  
Stacked: No

Semester Credit Hour(s)  
Credit Hour(s): 1-6  
Contact Hour(s) (per week):  
Lecture: 0  
Lab: 0  
Other: 1-6  
Total: 1-6

Repeatable for credit? Yes

Number of times repeated for credit: 1  
- OR -  
Maximum number of hours  
Within a student's career

CIP/Fund Code: 5114010014

Default Grade Mode: Satisfactory/Unsatisfactory (S)

Method of instruction: Practicum

Will this course be taught at another branch? No

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) No

Will this course be taught as a distance education course? No

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? No

This will be a required course or an elective course for the following programs:

<table>
<thead>
<tr>
<th>Required (select program)</th>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(PHD-MDSC) Doctor of Philosophy in Medical Sciences</td>
</tr>
</tbody>
</table>
**Program(s)**

(MS-MDSC) Master of Science in Medical Sciences

**Elective (select program)**

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**Course Syllabus**

Syllabus: Upload syllabus

Upload syllabus [MSCI 684 Syllabus.doc](#)

Letters of support or other documentation: No

Additional information: Changes made per email from Terra Bissett - 05/01/2019 (WZ)

Reviewer Comments:
- Terra Bissett (t.bissett) (05/01/19 9:14 am): Rollback: Please update catalog prerequisites to comply with catalog style guide. Please reference additional email with recommendations.
- Terra Bissett (t.bissett) (05/01/19 4:26 pm): Updates received.
Course title and number  MSCI 684 Professional Internship

Course Description and Prerequisites
A directed internship in an organization to provide students with on-the-job training with professionals in settings appropriate to the student’s career objectives.

The MSCI 684 Professional Internship will allow students in the Medical Sciences Program to gain real-world experiences and skills that can be applied in the career path the student chooses. Students enrolled in MSCI 684 will receive academic credit (up to 6 credit hours) for internships experiences designed to develop skills that are relevant to careers in the biomedical workforce. To earn academic credit the intern experiences must be sponsored by a company or professional organization and documented by a final presentation to the student’s faculty advisor. Attending educational workshops or working in another lab on the student’s graduate research projects will not be considered as internships.

MSCI 684 is limited to advanced doctoral students that have completed their graded course work, it may be taken twice (2X) for credit, and must have the approval of the advisory committee chair and the director of graduate studies.

Learning Outcomes or Course Objectives
The basic objectives for this course include (but not limited to):

1. Develop research and/or professional skills that are transferrable to future careers in biomedical sciences
2. Understand and gain exposure to various areas of the biomedical workforce and careers in the life sciences
3. Identify future employment opportunities
4. Demonstrate effective communication and leadership skills
5. Formulate a plan for future professional growth

Instructor Information
Name  Dr. Warren Zimmer, Director of Medical Sciences Graduate Program
Telephone number  979-436-0752
Email address  Com-gradstudies@medicine.tamhsc.edu;
Office hours  9am-5pm
Office location  147D Reynolds Medical Building

Name  Graduate Coordinator – Medical Sciences Graduate Program
Telephone Number  979-436-0751
Email Address  COM-Gradstudies@medicine.tamhcs.edu
Office Hours  8am-5pm
Office Location  Suite 147, Reynolds Medical Building
Requirements

Students enrolled must complete the following to gain credit in MSCI 684:

1. Submit an application for the internship to the Medical Sciences Graduate Office. This is a written summary of the opportunity you seek and the educational benefits to your career. The student’s advisory committee chair will be the instructor of record for MSCI 684, and they will be involved in writing the application summary AND include their willingness to participate in the process by co-signing the application. In the summary the student must list the company/professional society they will be working with, the HR contact for the party, and the exact dates for the internship. The internships usually last for a complete semester Spring, Fall or Summer. This must also contain a statement from the party accepting the student for the internship. This must be filed before enrolling in MSCI 684.

2. Half-way through, and at the conclusion of the internship, your internship site supervisor will complete an evaluation of your performance. The intent of these evaluations is to provide the student with information that can be used to improve their work and to provide advice or counseling for guidance of the student. These evaluations are sent to your advisory committee chair and to the Medical Sciences Graduate Office.

3. Submit a written report to your advisory committee chair describing your internship experience and how the experience will be utilized to further your career.

4. International students have some additional paperwork. If the internship is in the summer, off-campus and paid, Curricular Practical Training (CPT) forms must be submitted to International Student Services (ISS) by F-1 students. J-1 (sponsored) students have similar requirements to get permission for off-campus employment. Instructions and forms are at [http://iss.tamu.edu/Current-Students/F-1-Status/Curricular-Practical-Training](http://iss.tamu.edu/Current-Students/F-1-Status/Curricular-Practical-Training). If an F-1 international student is completing an internship in the fall or spring, they must submit CPT forms and apply for a full-course waiver, either from the Registrar’s Office or ISS, since they will be dropping below the required 9 credit hours of enrollment. Please read the Compliance with Full Time Enrollment Rules section and obtain an F-1 Reduced Course Load form, if necessary.

Grading

Your grade (S/U) for MSCI 684 will be awarded by your faculty advisor on the basis of satisfactory/unsatisfactory completion of the following: 1) positive internship site supervisor evaluations; and 2) a final written summary of your internship experience. These items will be filed with the MSCI Graduate Office and maintained in the student records file. It is the student’s responsibility to ensure that the appropriate items are filed to receive a satisfactory grade.

Attendance and Make Up Policy:
The University policy on attendance/excused absences can be found at: [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07).

If you know about an absence in advance that will affect your attendance at your internship site, please contact your research advisor and your internship supervisor before scheduling the dates of your internship. If you have an unexpected absence during your internship that can be officially excused, then your research advisor will be expected to provide an extension on the due dates for assignments due during or after the absence.

Americans with Disabilities Act (ADA)
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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit [http://disability.tamu.edu](http://disability.tamu.edu).

**Academic Integrity**

For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)

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

New Course Proposal

Date Submitted: 04/18/19 9:29 am

Viewing: STAT 600: Statistical Computations I

Last edit: 04/18/19 4:06 pm

Changes proposed by: longneck

Faculty Senate Number

Contact(s)

In Workflow
1. STAT Department Head
2. Curricular Services Review
3. SC Committee Preparer GR
4. SC Committee Chair GR
5. SC College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path
1. 04/10/19 2:04 pm
   Michael Longnecker (longneck): Approved for STAT Department Head
2. 04/12/19 11:08 am
   Terra Bissett (t.bissett): Rollback to Initiator
3. 04/16/19 3:12 pm
   Michael Longnecker (longneck): Approved for STAT Department Head
4. 04/18/19 8:55 am
   Terra Bissett (t.bissett): Rollback to Initiator
5. 04/18/19 9:37 am
   Michael Longnecker (longneck): Approved for STAT Department Head
6. 04/18/19 4:07 pm
   Terra Bissett (t.bissett): Approved for Curricular Services Review
7. 04/18/19 4:13 pm
   Kristy Vela (kvela): Approved for SC Committee Preparer GR
8. 05/10/19 2:56 pm
   Mark J. Zoran (mzoran): Approved for SC Committee Chair GR
9. 05/10/19 2:56 pm
   Mark J. Zoran (mzoran): Approved for SC College Dean GR

https://nextcatalog.tamu.edu/courseleaf/courseleaf.cgi?page=/courseadm...
### Catalog course description

Version control and code profiling; code vectorization and k-means algorithm; convex optimization and duality; gradient methods and iterative reweighted least squares, coordinate-descent method and sparse regression with Least Absolute Shrinkage and Selection Operator (LASSO); cross-validation and splitting techniques for model selection; efficient sparse matrix representations; parallel simulations on the cluster.

### Prerequisites and Restrictions

STAT 612 or concurrent enrollment; familiarity with R programming or approval of instructor.

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael Longnecker</td>
<td><a href="mailto:longneck@tamu.edu">longneck@tamu.edu</a></td>
<td>979-845-3144</td>
</tr>
</tbody>
</table>

### Semester Credit Hour(s)

<table>
<thead>
<tr>
<th>Semester Credit Hour(s)</th>
<th>Contact Hour(s) (per week): Lecture: 3</th>
<th>Lab: 0</th>
<th>Other: 0</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
non-traditional? (i.e., parts of term, distance education)

Will this course be taught as a distance education course? No

Is 100% of this course going to be taught in Texas? Yes

Will classroom space be needed for this course? Yes

This will be a required course or an elective course for the following programs:

<table>
<thead>
<tr>
<th>Required (select program)</th>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(PHD-STAT) Doctor of Philosophy in Statistics</td>
</tr>
</tbody>
</table>

| Elective (select program) |

---

**Course Syllabus**

Syllabus: Upload syllabus

Upload syllabus: [STAT 600 Statistical Computing I.pdf](https://nextcatalog.tamu.edu/courseleaf/courseleaf.cgi?page=/courseadm/...)

Letters of support or other documentation: No

Additional information

Reviewer Comments

Terra Bissett (t.bissett) (04/12/19 11:08 am): Rollback: Syllabus: update course number and course title; "Late homework will never be accepted" – what about University excused absences?

Terra Bissett (t.bissett) (04/18/19 8:55 am): Rollback: Please define "LASSO" within catalog course description; there are two syllabi attached - one has been updated. If the other is not needed, please remove.

Terra Bissett (t.bissett) (04/18/19 4:06 pm): Updates received.

Reported to state? Add CS
# STAT 600: Statistical Computations I

## Fall 2019

**Instructor:** Irina Gaynanova  
**Email:** irinag@stat.tamu.edu  
**Time:** TBA  
**Place:** TBA  
**Office hours:** TBA  
**Office:** Blocker 458D

## 1 Course overview

**Prerequisites:** Matrix algebra at the level of STAT 612 (concurrent enrollment is allowed) and familiarity with R programming language, or instructor’s approval

- The course will make fairly heavy use of matrix algebra, routinely using vector and matrix derivatives, norms, eigenvalues and eigenvectors, matrix inverse, etc.

- Prior exposure to multivariate analysis and numerical optimization will be useful, though it is not required.

- R is required for homework assignments and final project. If you have good knowledge of another programming language, you may still take the class with the understanding that you will have to pick up R

**Description:** This course is primarily designed for graduate students in statistics, applied mathematics, computer science and related fields who are interested in statistical computing. The course will cover version control, code profiling, numerical optimization, writing documentation and creating R packages. All the topics will be motivated by computational challenges in implementing some common statistical methods such as logistic regression, k-means clustering, sparse regression with lasso, etc. The tentative topics are

- Version control and code profiling
- Code vectorization and k-means algorithm
- Brief review of convex optimization and duality
- Gradient methods and iterative reweighted least squares algorithm
- Coordinate-descent methods and sparse regression with LASSO
- Cross-validation and splitting techniques for model selection

Depending on the time and students’ interests, we may also cover some of the following topics towards the end of the course:

- Interfacing R with C and C++
- Efficient sparse matrix representations
- Parallel simulations on the cluster
- Statistical graphics

**Expected outcomes:** Upon the course completion, students should be able to write well-designed R code to implement various optimization algorithms for statistical methods, create an R package and be accustomed to using reproducible research practices, such as version control and good documentation maintenance.
2 Course materials

Website: Lecture notes, homework assignments, and important course information will be posted on eCampus (http://ecampus.tamu.edu/)

Software: The use of R is required for the homework assignments and the final project.

Recommended references: There is no required book for the course, but depending on your background and interests, you may find the following references useful:


3 Grading

Grading Policy: Homework (25%), Midterm (30%), Project (45%).

Homeworks: will be assigned (approx.) bi-weekly. The assignments will consist of programming various statistical methods in R, and will be given 2 weeks in advance of the due date via Github Classroom. The students can access and submit their work online at any time after the posted date, but only the work submitted up to due date will be considered for grading. The programming assignments should be well-commented and strictly follow the guidelines. You can discuss the assignments with other students, but you can not share your written solutions or the code. The solutions and the code should be written on your own.

Exams: there will be one midterm exam and no final. The midterm will be in class on TBA. If you know you will miss the exam for a valid reason, please notify me or the main office of the Department of Statistics as soon as possible. For what constitutes a university excused absence, see http://student-rules.tamu.edu/rule07.

Final project: The project will involve writing an R package and has to be done individually. The group project may be allowed upon instructor’s permission. More details about the project will be given within the first two weeks of the semester. You will be required to submit a project proposal, an intermediate package and a final R package. I will stop assigning homeworks towards the end of the semester so you have more time to work on your project.

4 Class policies

Regular class attendance is assumed. I do not monitor attendance, however anything that is missed because a student is not in class is the student’s responsibility. Syllabus details, including homework assignments, office hours and test dates, may be changed by in-class announcements. Missing one class could easily
lead to a disastrous domino effect. If you have to miss a lecture, then I strongly recommend you study the material you missed before you return to class:

- Copy, and read notes from someone who was in class,
- Read the relevant sections from textbook.

After you have done this, you may contact me if you need any clarifications. I require that you know all material covered in class.

Classroom policies: The use of cellphones is not allowed during class, so make sure your cellphone is on silent, and that you are not texting, reading emails, playing games, etc. If you have an emergency, please exit the classroom for communication to avoid disrupting your peers. I will enforce this policy.

Office hours versus email: Questions about course material should be addressed during office hours. Please use email only for administrative issues.

Disability accommodation: 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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit [http://disability.tamu.edu](http://disability.tamu.edu).

Copyright notice: 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 quizzes, exams, 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.

Plagiarism: As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writing, 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, please consult the latest issue of the Texas A&M University Student Rules, under the section “Scholastic Dishonesty.”

Course Change Request

New Course Proposal

Date Submitted: 05/20/19 3:43 pm

Viewing: VPAT 667 : Animal Research Laws and Regulations

Last edit: 06/04/19 11:52 am

Changes proposed by: kathiesmith

Faculty Senate Number

Contact(s)

In Workflow
1. VTPB Department Head
2. Curricular Services Review
3. VM Committee Preparer GR
4. VM Committee Chair GR
5. VM College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path
1. 04/15/19 11:19 am
   Ramesh Vemulpalli (r vemulpalli): Approved for VTPB Department Head
2. 04/16/19 4:26 pm
   Terra Bissett (t. bissett): Rollback to Initiator
3. 05/04/19 10:50 am
   Ramesh Vemulpalli (r vemulpalli): Approved for VTPB Department Head
4. 05/04/19 11:53 am
   Terra Bissett (t. bissett): Approved for Curricular Services Review
5. 06/08/19 2:07 pm
   Kathie Smith (kathiesmith): Approved for VM Committee Preparer GR
6. 06/10/19 9:52 am
   Mike Cricciello (m.cricciello): Approved for VM Committee Chair GR
7. 06/10/19 10:55 am
   Robert Burghardt (r. burghardt): Approved for VM College Dean GR
8. 06/10/19 2:21 pm
   Cherise Castille (cherise.castille): Approved for GC
Course prefix: VPAT  
Course number: 667  
Department: Veterinary Pathobiology  
College/School: Veterinary Med & Biomedical Sc  
Academic Level: Graduate  
Effective term: Fall 2020  
Complete Course Title: Animal Research Laws and Regulations  
Abbreviated Course Title: ANIMAL RESEARCH LAWS & REGS  
Catalog course description: Laws and policies regarding the ethical use of animals in biomedical and agricultural research; familiarity with the major U.S. laws and regulations surrounding the production and use of laboratory animals for research, teaching and testing.  
Prerequisites and Restrictions: DVM degree or equivalent, or approval of instructor.  
Concurrent Enrollment: No  
Should catalog prerequisites / concurrent enrollment be enforced? No  
Crosslistings: No  
Stacked: No  
Semester Credit Hour(s): 2  
Contact Hour(s) (per week): Lecture: 2  
Lab: 0  
Other: 0  
Total: 2  
Repeatable for credit? No  
Three-peat? No  
CIP/Fund Code: 5125090002  
Default Grade Mode: Letter Grade (G)  
Alternate Grade Modes: Satisfactory/Unsatisfactory  
Method of instruction: Lecture  
Will this course be taught at another branch? No  
Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education) No  
Will this course be No

Name | E-mail | Phone |
---|---|---|
Kathie Smith | KSmith@cvm.tamu.edu | 979-845-2851 |
taught as a distance education course? Yes
Is 100% of this course going to be taught in Texas? Yes
Will classroom space be needed for this course? Yes
This will be a required course or an elective course for the following programs:

<table>
<thead>
<tr>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(MS-BIMS) Master of Science in Biomedical Sciences</td>
</tr>
<tr>
<td>(PHD-BIMS) Doctor of Philosophy in Biomedical Sciences</td>
</tr>
</tbody>
</table>

### Course Syllabus

<table>
<thead>
<tr>
<th>Syllabus:</th>
<th>Upload syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upload syllabus</td>
<td>VPAT 667 Syllabus.doc</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Letters of support or other documentation</th>
<th>No</th>
</tr>
</thead>
</table>

Additional information

Reviewer Comments

**Terra Bissett (t.bissett) (04/16/19 4:26 pm):** Rollback: Recommend updating catalog prerequisites to comply with catalog style guide to a statement such as “DVM degree or equivalent, or approval of instructor”; the additional information is a better fit for the syllabus. Indicate on the form if the course will be required or elective. Syllabus: based upon minimum syllabus requirements “If more than 10% of grade is based on participation, syllabus should explicitly define and outline how grade is determined.”

**Terra Bissett (t.bissett) (06/04/19 11:52 am):** Updates received.

Reported to state?

Add CS

Key: 19064
Course title and number  VPAT 667: Animal Research Laws & Regulations
Term (e.g., Fall 200X)  Spring
Meeting times and location  Mondays 3-5 pm; TBD

Course Description and Prerequisites

Laboratory animal medicine is specialty within regulatory medicine. Students will gain a working knowledge of the laws and policies regarding the ethical use of animals in biomedical and agricultural research. Students will become familiar with the major US laws and regulations surrounding the production and use of laboratory animals for research, teaching, and testing.

This course is designed on a “flipped” classroom model. Students should read the required texts prior to class and be ready to apply these regulations during the discussion (2nd) hour. Most weeks, a limited amount of time will be devoted to a very brief overview of the regulatory topic of that week. The rest of the class period will be spent applying the regulations in case-based scenarios, discussions, and projects.

Prerequisite: VOM, MD, DDS degree (other equivalent degrees or other graduated students may be accepted with the permission of the instructor)

Learning Outcomes or Course Objectives

Laboratory animal medicine is specialty within regulatory medicine. It is therefore essential that comparative medicine residents be well versed in all applicable laws and policies regarding the ethical use of animals in biomedical and agricultural research.

At the end of this course, students should be able to:

1. **Demonstrate critical thinking**, including the ability to:
   - Identify the applicable regulations/policies in a given real-world scenario;
   - Evaluate, analyze, and integrate information in a given real-world scenario and apply the pertinent regulations to come to a conclusion as the legality of the activity;
   - Develop critical, reasoned positions to defend a particular regulatory opinion/stance; and
   - Develop policies that takes into account all shareholders in animal research, teaching, and testing.

2. **Practice ethical leadership** including the ability to:
   - Recognize an ethical dilemma and apply rational decision-making in order to address it;
   - Choose ethical courses of action in research and practice;
   - Acknowledge and address the consequences of the regulatory actions on all committed parties (e.g., institution, principal investigator, animal care and use committee).

3. **Communicate effectively**, including the ability to:
   - Demonstrate effective oral communication skills;
   - Explain the regulatory oversight of animals in research to the lay-public;
   - Present work effectively to support a regulatory opinion/stance.
Instructor Information

Name: Tracy Vemulapalli, DVM, MS, DACLAM
Telephone number: (979) 458-1774
Email address: tvemulapalli@cvm.tamu.edu
Office hours: By Appointment
Office location: VIDI 384

Textbook and/or Resource Material

Required textbooks: None.

Resource materials: This course will use freely available US government regulatory and guidance documents. Most government regulatory documents are available as PDFs for free download on the internet. In the event that a document cannot be downloaded at no cost, these materials will be provided to the students in the form of handouts and supplemental materials.

Grading Policies

The Final Grade in Course is Based on (% for each):

- 30% Short Quizzes
- 10% Oral Reports
- 20% Hour Exams
- 20% Final Exams
- Attendance
- Written Reports
- Lab. Perform.
- Attitude & Motivation
- Participation in class discussions

Quizzes: Short quizzes will be given during the first 10 minutes of most classes to assess student understanding of the previous lecture.

Online or take-home tests: On assignments that are declared “open book”, students may use any written resource available, but the written answer(s) must be their own (duplication of a classmate’s work or consultation with anyone about take home assignments/exam questions is not permitted). When necessary, students may ask the instructor for clarification on a specific assignment.

Oral presentations: Individual students (or small groups if student numbers support) will make oral presentations on a particular aspect of regulatory medicine. Students will be graded on the quality of their scholarship in researching the topic and organization of the materials. Particular attention will be paid to how they use the applicable regulations to support their position.

Participation: Participation consists of more than just attending class. A student who attends class on time and regularly but does no more will earn a C for class participation. In order to earn a participation grade higher than C, a student must actively participate. Listed below are examples of things you can do that will lower and raise your class participation grade. This following list is illustrative, not exhaustive:

**Behaviors that will Lower Class Participation Grade**
- Has excessive unexcused absences (attendance is taken)
- Enters class late, leaves early, or gets up and leaves during the class session
- Does not pay attention, works on other material, daydreams, talks to neighbors, or other disruptive behavior (including disruptive use of electronic devices)
- Talks without giving any thought or deliberation to what others are going to say
- Is unprepared for class

**Behaviors that will Raise Class Participation Grade**
- Attempts to answer questions asked of the class (answers need not be correct, and genuine and serious attempts to answer questions are rewarded)
- Asks questions about the material being discussed
- Shares with the class/small group (and the instructor) relevant information found outside of class
- Contributes positively to the class discussion and small group activity
- Expends effort on in-class exercises
Late work will not be accepted unless the reason for the late/missed work is an excused absence.

Policy on Make-up Examinations: Make-up exams will only be given to a student who missed the exam due to an excused absence. Missed exams due to an unexcused absence will result in a grade of zero (0). For more on attendance, see Class Attendance (below).

Class Attendance: Mandatory. Students are expected to attend all classes and laboratories. Failure to attend classes/lab may result in loss of points. Anticipated absences must be discussed with the instructor prior to the date of the absence. Regarding anticipated/unanticipated absences, students are expected to follow the Attendance Policy of the Texas A&M University Student Rules (Part I, Sect. 7).
https://student-rules.tamu.edu/rule07/

Grading Scale:

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

Course Topics, Calendar of Activities, Major Assignment Dates:

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topic</th>
<th>Planned Activity</th>
<th>Required Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction – The Regulatory Environment</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td>The Animal Welfare Act Regulations</td>
<td></td>
<td>AWAR; Part II</td>
</tr>
<tr>
<td>2</td>
<td>The Animal Welfare Act Regulations (con't)</td>
<td>Case Discussion</td>
<td>AWAR; Part III (Facilities and Animal Health Sections for each species; Transportation will be dealt with in a separate lecture)</td>
</tr>
<tr>
<td>3</td>
<td>Public Health Service Policy</td>
<td>Case Discussion</td>
<td>PHS Policy</td>
</tr>
<tr>
<td>4</td>
<td>The Guide for Care and Use of Laboratory Animals: Part I</td>
<td>Case Discussion</td>
<td>The Guide, 8th Ed</td>
</tr>
<tr>
<td>5</td>
<td>The Guide for Care and Use of Laboratory Animals: Part II</td>
<td>Putting it All together: Regulatory Scenarios; Oral presentations</td>
<td>The Guide, 8th Ed</td>
</tr>
<tr>
<td>6</td>
<td>The Ag Guide</td>
<td>Putting it All together: Regulatory Scenarios; Oral presentations</td>
<td>Ag Guide (FASS)</td>
</tr>
<tr>
<td>7</td>
<td>AVMA Guidelines for the Euthanasia of Animals</td>
<td>Case Discussion</td>
<td>AVMA AGE document</td>
</tr>
<tr>
<td>8</td>
<td>Midterm Exam</td>
<td></td>
<td>n/a</td>
</tr>
<tr>
<td>9</td>
<td>Humane Transportation of Research Animals</td>
<td>Case Discussions</td>
<td>AWAR: Part III - Subpart B §3.35-3.41, Subpart C §3.50-3.53, Subpart D §3.86-3.92; Subpart E §3.112-3.118; Subpart F §3.136-3.142; Guidelines for the Humane Transportation of Research Animals</td>
</tr>
<tr>
<td>10</td>
<td>Biocontainment Facilities &amp; Procedures</td>
<td>TBD</td>
<td>n/a</td>
</tr>
<tr>
<td>11</td>
<td>Biosafety in Microbiological &amp; Biomedical Laboratories</td>
<td>Case Discussions</td>
<td>BMBL, 5th Ed. (CDC)</td>
</tr>
</tbody>
</table>
Final Exam: A cumulative final exam will be given covering all the material in the course. This will be in the form of an open-book take home exam.

Other Pertinent Course Information

Americans with Disabilities Act (ADA)

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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit [http://disability.tamu.edu](http://disability.tamu.edu).

Academic Integrity

For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)

"An Aggie does not lie, cheat, or steal, or tolerate those who do.”
Course Change Request

New Course Proposal

Date Submitted: 04/16/19 4:34 pm

Viewing: **VPAT 668 : Animal Models**

Last edit: 04/16/19 4:34 pm

Changes proposed by: kathiesmith

Contact(s)

---

In Workflow

1. VTPB Department Head
2. Curricular Services Review
3. VM Committee Preparer GR
4. VM Committee Chair GR
5. VM College Dean GR
6. GC Preparer
7. GC Chair
8. Faculty Senate Preparer
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path

1. 04/15/19 11:18 am
   Ramesh Vemulapalli (r vemulapalli): Approved for VTPB Department Head
2. 04/16/19 4:27 pm
   Terra Bissett (t.bissett): Rollback to Initiator
3. 05/04/19 10:50 am
   Ramesh Vemulapalli (r vemulapalli): Approved for VTPB Department Head
4. 06/04/19 1:50 pm
   Terra Bissett (t.bissett): Approved for Curricular Services Review
5. 06/08/19 2:07 pm
   Kathie Smith (kathiesmith): Approved for VM Committee Preparer GR
6. 06/10/19 9:52 am
   Mike Criccitello (m.criccitello): Approved for VM Committee Chair GR
7. 06/10/19 10:57 am
   Robert Burghardt (r.burghardt): Approved for VM College Dean GR
8. 06/10/19 2:21 pm
   Cherise Castille (cherise.castille): Approved for GC
### Course Information

- **Course prefix**: VPAT
- **Course number**: 668
- **Department**: Veterinary Pathobiology
- **College/School**: Veterinary Med & Biomedical Sc
- **Academic Level**: Graduate
- **Effective term**: Fall 2020
- **Complete Course Title**: Animal Models
- **Abbreviated Course Title**: ANIMAL MODELS

### Catalog Description

Working knowledge of the most common animal models used to study both human and animal diseases and conditions.

### Prerequisites and Restrictions

DVM degree and acceptance into the Laboratory Animal Residency Program, or approval of instructor.

### Should catalog prerequisites / concurrent enrollment be enforced?

- **Yes**

### Crosslistings

- **Crosslisted With**: No

### Stacked

- **Stacked with**: No

### Contact Hour(s) (per week):

- **Lecture**: 1
- **Lab**: 0
- **Other**: 0
- **Total**: 1

### Method of instruction

- **Lecture**

### Will this course be taught as a distance education course?

- **Yes**

### Is 100% of this course going to be taught in Texas?

- **Yes**

### Will classroom space

- **Yes**

### Instructor Information

- **Name**: Kathie Smith
- **E-mail**: KSmith@cvm.tamu.edu
- **Phone**: 979-845-2851

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VPAT 668: Animal Models
https://nextcatalog.tamu.edu/courseleaf/courseleaf.cgi?page=/courseadm...
This will be a required course or an elective course for the following programs:

<table>
<thead>
<tr>
<th>Program(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(MS-BIMS) Master of Science in Biomedical Sciences</td>
</tr>
<tr>
<td>(PHD-BIMS) Doctor of Philosophy in Biomedical Sciences</td>
</tr>
</tbody>
</table>

Course Syllabus

Syllabus: Upload syllabus

Upload syllabus

VPAT 668 Syllabus.docx

Letters of support or other documentation

No

Additional information

Reviewer Comments

Terra Bissett (t.bissett) (04/16/19 4:27 pm): Rollback: Recommend updating catalog prerequisites to comply with catalog style guide to a statement such as "DVM degree and acceptance into the laboratory animal residency program, or approval of instructor"; the additional information is a better fit for the syllabus. Please indicate on the form if the course will be required or elective.

Terra Bissett (t.bissett) (06/04/19 1:50 pm): Updates received.
Course title and number  VPAT 668: Animal Models
Term (e.g., Fall 200X)  Spring
Meeting times and location  Thursday 11-12 pm; TBD

Course Description and Prerequisites

In this course, students will gain a working knowledge of the most common animal models used experimentally to study both human and animal diseases and conditions. This is a required course in the comparative medicine residency training program.

This course is designed for students that have a DVM degree.

Prerequisite: DVM and acceptance into the laboratory animal residency program (other equivalent degrees or other graduate students may be accepted with the permission of the instructor).

Learning Outcomes or Course Objectives

Animal models are foundational to the understanding of veterinarians wishing to pursue specialty training in Laboratory Animal Medicine. It is essential that laboratory animal veterinarians possess a working knowledge of the most common animal models used experimentally to study both human and animal diseases and conditions. Laboratory animal specialists must also be able to identify animal models best suited to a given discipline or scientific question (e.g. models of ischemic stroke). A basic knowledge of the biology and husbandry of the most common laboratory animal species is beneficial.

This course is designed to prepare comparative medicine residents for the certifying (“board”) examination of the American College of Laboratory Animal Medicine (ACLAM). Course objectives are derived from the ACLAM Role Delineation Document (2013). The RDD is attached and the objectives covered by this course are highlighted in yellow.

Instructor Information

Name  Tracy Vemulapalli, DVM, MS, DACLAM
Telephone number  (979) 458-1774
Email address  tvemulapalli@cvm.tamu.edu
Office hours  By Appointment
Office location  VIDI 384

Textbook and/or Resource Material

Required textbooks:
Grading Policies

The Final Grade in Course is Based on (% for each):

- **Short Quizzes**: 15%
- **Oral Reports**: 5%
- **Attendance**: 50%
- **In-Class Exams**: 25%
- **Written Reports**: 10%
- **Lab. Perform.**: 10%
- **Attitude & Motivation**: 25%
- **Participation in class discussions**: 25%

Class Attendance: Mandatory. Students are expected to attend all classes and laboratories. Failure to attend classes/lab may result in loss of points. Anticipated absences must be discussed with the instructor prior to the date of the absence. Regarding anticipated/unanticipated absences, students are expected to follow the Attendance Policy of the Texas A&M University Student Rules (Part I, Sect. 7).

https://student-rules.tamu.edu/rule07/

Participation: Short quizzes (e.g., iClickers, paper quizzes) will be given during the most class periods to assess student understanding of the previous lecture. These will count toward the students’ quiz grade.

Online or take-home tests: On assignments that are declared “open book”, students may use any written resource available, but the written answer(s) must be their own (duplication of a classmate’s work or consultation with anyone about take home assignments/exam questions is not permitted). When necessary, students may ask the instructor for clarification on a specific assignment.

In-class exams: Will be closed-book and may utilize the ExamSoft delivery platform.

Oral presentations: Individual students (or small groups if student numbers support) will make oral presentations on a particular aspect of laboratory animal medicine. Students will be graded on the quality of their scholarship in researching the topic and organization of the materials.

Late work will not be accepted unless the reason for the late/missed work is an excused absence (as discussed under Class Attendance).

Policy on Make-up Examinations: Make-up exams will only be given to a student who missed the exam due to an excused absence. Missed exams due to an unexcused absence will result in a grade of zero (0).

Grading Scale

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

Course Topics, Calendar of Activities, Major Assignment Dates

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/17/2019</td>
<td><em>IACUC Retreat – Class Rescheduled</em></td>
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<tr>
<td>1/24/2019</td>
<td><em>Class Rescheduled due to Jury Duty</em></td>
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<tr>
<td>1/31/2019</td>
<td>Introduction to Animal Models: General Concepts <em>(from 1/17)</em></td>
<td>As assigned</td>
<td>THV</td>
</tr>
<tr>
<td>2/7/2019</td>
<td>Musculoskeletal disorders</td>
<td>As assigned</td>
<td>THV</td>
</tr>
<tr>
<td></td>
<td>Neurologic disorders (e.g., stroke/neurodegenerative) <em>(from 1/24)</em></td>
<td>As assigned</td>
<td>THV</td>
</tr>
<tr>
<td>2/14/2019</td>
<td>Finish Neurologic disorders – Part II; Pain models</td>
<td>As assigned</td>
<td>THV</td>
</tr>
<tr>
<td>2/15/2019</td>
<td><strong>Exam I</strong> <em>(released on 2/15 – UPLOAD due date 2/20 midnight)</em></td>
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<tr>
<td>2/21/2019</td>
<td>GI models (e.g., obesity, diabetes, metabolic, and liver)</td>
<td>As assigned</td>
<td>THV</td>
</tr>
<tr>
<td>2/28/2019</td>
<td>Urinary tract, kidney, bowel models</td>
<td>As assigned</td>
<td>THV</td>
</tr>
<tr>
<td>3/7/2019</td>
<td>Infection/Immunology/Immunodeficiency Models – Part I</td>
<td>As assigned</td>
<td>THV</td>
</tr>
<tr>
<td>3/14/2019</td>
<td><strong>SPRING BREAK – (No Class)</strong></td>
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</tbody>
</table>
3/21/2019 Infection/Immunity/Immunodeficiency Models – Part II As assigned THV

3/28/2019 Exam II

4/4/2019 Cardiovascular As assigned THV
4/11/2019 Skin and Adnexa As assigned TBD
4/18/2019 Select Cancer models As assigned TBD
4/25/2019 Behavior/Psychological conditions (e.g., Depression, Mania, Bipolar, Schizophrenia, Addiction, etc.) As assigned TBD
5/2/2019 Final Exam (cumulative)

TBD – These will be student presentations.

Final Exam: A cumulative final exam will be given covering all the material in the course. This will be in the form of an in-class exam modeled after the ACLAM certifying examination.

Other Pertinent Course Information

Americans with Disabilities Act (ADA)
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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Academic Integrity

For additional information please visit: http://aggiehonor.tamu.edu

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

The Role Delineation Document is comprised of six Domains. Each Domain is composed of Tasks and Knowledge topics. As a result of the Role Delineation study, most of the tasks have been identified as those performed by an ACLAM Diplomate at the time of certification. Some of the tasks were identified as being performed predominantly after certification has been earned.

The knowledge topics were identified in one of three categories:
- Acquired predominantly during a DVM/VMD program
- Required at time of certification
- Acquired predominantly either on the job or in a continuing education setting after certification

NOTE: The tasks and knowledge statements are cumulative, i.e., tasks performed at the time of certification continue to be performed post certification and knowledge required at time of certification builds on prerequisite knowledge acquired during a DVM/VMD program. In addition, listing task and knowledge statements as predominantly acquired either during a DVM/VMD program or post certification does not preclude inclusion of these items in recognized training program curricula or on the ACLAM certification examination. The fundamental basis for all knowledge and task statements is expected of all minimally competent diplomats regardless of when the knowledge is predominantly acquired or the task predominantly performed.
Domain 1: Management of Spontaneous and Experimentally Induced Diseases and Conditions

Tasks performed at time of certification
T1. Prevent spontaneous or unintended disease or condition
T2. Control spontaneous or unintended disease or condition
T3. Diagnose disease or condition as appropriate
T4. Treat disease or condition as appropriate

Knowledge required to perform these tasks acquired usually during a DVM/VMD program

K1. diagnostic procedures
   a. conduct of a physical examination
   b. clinical pathology (e.g., hematology [CBC]; clinical chemistries and urinalysis)
   c. other diagnostic procedures (e.g., imaging techniques; EKG)
K2. surgical techniques associated with diagnostic (e.g., exploratory; biopsy) and therapeutic (e.g., tumor removal) surgeries
K3. immunobiology (e.g., antibody responses; cellular immunity; species-specific immune responses)
K4. nutrition with emphasis on effects of deficiency or toxicity

Knowledge required to perform these tasks at time of certification as a Diplomate

K1. anatomy with emphasis on features which have significance with regard to clinical medicine (e.g., rat Harderian gland) or experimental medicine (e.g., coronary artery anatomy of the pig, which allows use for induced infarcts; Circle of Willis anatomy in gerbils, which allows use in stroke models)
K2. physiology with emphasis on normative data and characteristics (e.g., seasonal changes in squirrel monkeys; coprophagia in rabbits), metabolic differences (e.g., hypoglycemia in squirrel monkeys) or metabolism of induced disease (e.g., streptozotocin-induced diabetes mellitus), reproductive physiology, and clinically significant physiological features
K3. parasitology with emphasis on parasitic diseases that can become established in a colony and zoonotic parasitic diseases
K4. microbiology with emphasis on organisms of clinical significance; subclinical infections that cause physiologic, biochemical, and/or immunologic alterations; zoonotic disease organisms; organisms used experimentally to induce infection and unintended infections (e.g., infections associated with chronic vascular cannulation); and sampling and culture techniques for such organisms
K5. anatomic pathology including pathogenesis of significant naturally occurring (e.g. tuberculosis) and experimentally induced (e.g. collagen
induced arthritis) diseases; typical gross and histopathologic lesions (e.g., age-related changes, or pathologic changes of adverse phenotypes associated with genetically modified rodents); and pertinent anatomic pathology techniques (e.g., Steiner's stain)
K6. pharmacology with emphasis on drugs used to treat spontaneous or induced disease (e.g., indications, use and contraindications of drugs; adverse reactions; adverse interactions; mechanisms of action; species-specific toxicity), and drugs used to induce disease (e.g., azoxymethane to induce neoplasia, or Dextran sulfate sodium (DSS) to induce colitis)
K7. epidemiology including species-specific susceptibility to induced disease (e.g., modes of disease transmission; latency; persistence; prevalence; incidence)
K8. preventive medicine (e.g., immunization; quarantine; prescreening tests)
K9. diagnostic procedures
   a. species-specific behavioral assessment
   b. serologic, cytologic, and molecular diagnostic tests (e.g., PCR; ELISA; IFA; HAI; MAP) and proper sampling techniques
K10. genetics with emphasis on control and treatment of naturally occurring and experimentally induced disease, predisposition to disease, and modes of inheritance

Domain 2: Management of Pain and Distress

Tasks performed at time of certification

T1. Recognize pain and/or distress
T2. Minimize or eliminate pain and/or distress
T3. Administration of anesthesia
T4. Euthanatize (Euthanize)

Knowledge required to perform these tasks acquired usually during a DVM/VMD program

K1. anatomy and physiology of pain and distress
K2. patient monitoring
K3. critical and post-procedural care techniques

Knowledge required to perform these tasks at time of certification as a Diplomate

K1. assessment of pain and distress (e.g., behavior which is a sign of pain and/or distress; physiologic changes; pain and distress scoring systems)
K2. causes of pain
K3. causes of distress
K4. effects of pain and distress on normative physiology and on research studies
K5. pharmacological interventions for pain and distress and their effects on physiology, including age and species differences for such interventions, and depth and duration of analgesia provided by such interventions
K6. nonpharmacological interventions for pain and distress and their effects on physiology, including age and species differences for such interventions
K7. euthanasia
K8. humane endpoint criteria

Domain 3: Research

Tasks performed at time of certification

T1. Facilitate or provide research support
T2. Advise and consult with investigators on matters related to their research
T3. Design and conduct research

Knowledge required to perform these tasks at time of certification as a Diplomate

K1. biomethodology techniques (e.g., collection of blood and other body fluids and tissues; handling and restraint; administration of compounds and treatments)
K2. research methods and equipment (e.g., antibody production; adjuvants; tumor induction; imaging; data collection techniques such as telemetry; observation; behavioral assessment methods)
K3. animal models (spontaneous and induced) including normative biology relevant to the research (e.g., background lesions of common strains)
K4. genetics and nomenclature
K5. genetic modification/engineering technology including application of molecular biology techniques
K6. characterization of animal models (e.g., phenotyping, behavioral assessment)
K7. gnotobiotics
K8. experimental surgical techniques and instrumentation
K9. principles of experimental design and statistics including scientific method
K10. information resources (e.g., National Agricultural Library; National Library of Medicine)
K11. scientific writing
K12. Replacement, Reduction and Refinement techniques
K13. Effective methods for communicating research-related concerns
K14. Aseptic requirements for performing surgery
K15. genomics, metabolomics, and proteomics
Tasks performed usually post-certification as a Diplomate

T1. Collaborate with other scientists on research projects

Knowledge required to perform the tasks in the Domain acquired usually post-certification

K2. grant application, review and funding mechanisms

Domain 4: Animal Care

Tasks performed at time of certification

T1. Develop animal husbandry programs
T2. Manage or provide indirect management/oversight of animal husbandry programs
T3. Manage or provide indirect management/oversight of laboratory animal facilities

Knowledge required to perform these tasks at time of certification as a Diplomate

K1. species-specific husbandry (e.g., nutrition, housing, exercise)
K2. environmental enrichment
K3. methods of sterilization, sanitation, and decontamination
K4. quality assurance techniques for animal care-related equipment (e.g., verification of effective cage sanitation) and supplies (e.g., water, food, bedding)
K5. animal procurement considerations (including sources, vendor surveillance, genetic monitoring, transportation)
K6. breeding colony management (e.g., systems and records, genetic monitoring)
K7. animal identification systems
K8. pest control (e.g., methods, hazards and toxicity)
K9. pathogen-free barriers (exclusion)
K10. containment facilities (inclusion)
K11. environmental causes of physiological alterations in animals and their effects on research (e.g., sound, light, temperature, humidity, housing systems)
K12. environmental monitoring
K13. watering and feeding (e.g., automated watering, liquid diets, ad lib or restricted diets)

Tasks performed usually post-certification as a Diplomate
T1. Design laboratory animal facilities
Knowledge required to perform the tasks in the Domain acquired usually post-certification

K1. selection criteria for animal care-related equipment and supplies
K2. fiscal management as it relates to budgetary and financial issues associated with animal facility management (e.g., per diem rate setting; equipment cost comparisons)
K3. human resource management as it relates to operation of animal care and use programs
K4. disaster planning
K5. facility planning, design, and construction (e.g., programming, commissioning, master planning, material selection, security)
K6. mechanical, electrical and plumbing systems
K7. waste management
K8. housing systems (e.g. aquatics, rodents high density housing, NHP caging)

Domain 5: Regulatory Responsibilities

Tasks performed at time of certification
T1. Perform direct or delegated Attending Veterinarian responsibilities
T2. Advocate for humane care and use of animals
T3. Provide advice to occupational health and safety programs
T4. Provide advice on biological, chemical and radiation hazards in an animal research program
T5. Serve as a member of an IACUC
T6. Review protocols and provide advice to investigators and the IACUC

Knowledge required to perform these tasks acquired usually during a DVM/VMD program

K1. laws, regulations, policies and standards
   a. Controlled Substances Act/DEA Regulations

Knowledge required to perform these tasks at time of certification as a Diplomate

K1. laws, regulations, policies and standards
   a. Animal Welfare Act, USDA regulations, Animal Care policies
   b. Health Research Extension Act, Public Health Service Policy on Humane Care and Use of Laboratory Animals, OLAW interpretive guidance
   c. Guide for the Care and Use of Laboratory Animals (ILAR/NRC)
   d. AVMA Guidelines for the Euthanasia of Animals (AVMA)
   e. Biosafety in Microbiological and Biomedical Laboratories (CDC/NIH)
   f. Good Laboratory Practices (FDA/EPA)
g. Endangered Species Act/CITES  
h. Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching (FASS)  
i. Live Animals Regulations (IATA – International Air Transportation Association)  
j. USDA and CDC animal importation regulations  
k. NIH Recombinant DNA Guidelines and Office of Biotechnology  
l. Occupational Health and Safety in the Care and Use of Research Animals (ILAR/NRC)  
m. Occupational Health and Safety in the Care and Use of Nonhuman Primates  

K2. role and function of the IACUC  
K3. protocol review  
K4. facility inspection and program review  
K5. occupational health and safety (e.g., ergonomics; OSHA; allergens; blood-borne pathogens; radiation and chemical hazards; MSDS)  
K6. role and function of the Institutional Biosafety Committee (IBC)  
K7. role and function of the Association for Assessment and Accreditation of Laboratory Animal Care – International (AAALAC)  
K8. responsible conduct of research

Knowledge required to perform the tasks in the Domain acquired usually post-certification

K1. international laws, policies, and standards (e.g., Canadian Council on Animal Care; EU Directives)

Domain 6: Education

Tasks performed at time of certification

T1. Train personnel in animal care and use  
T2. Maintain current knowledge and continued competence in laboratory animal medicine

Knowledge required to perform these tasks at time of certification as a Diplomate

K1. educational resources (e.g., publications, inanimate models, computer applications, conferences)  
K2. certification programs (e.g., AALAS technician certification program, ACLAM certification)  
K3. societal issues involving use of animals:  
a. organizations related to and/or supportive of laboratory animal medicine and animal research (e.g., AALAS, ASLAP, ILAR, NABR, AMP)
b. organizations opposed to animal research (e.g., PETA, HSUS) including their philosophy and opposition strategies

c. philosophy and ethics of animal use


d. history and value of animal research

Tasks performed usually post-certification as a Diplomate

T1. Provide education in academic and/or laboratory animal residency programs

T2. Outside of formal training programs, mentor those interested in or involved in laboratory animal medicine

T3. Provide community outreach on animal care and use
**Species Categories**

Based on mean importance ratings from the Role Delineation Study, the suggested species were classified as primary, secondary and tertiary. Below is the list by category.

<table>
<thead>
<tr>
<th>Category</th>
<th>Species</th>
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<tbody>
<tr>
<td>Primary</td>
<td>Mouse (<em>Mus musculus</em>)</td>
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<tr>
<td>Primary</td>
<td>Rat (<em>Rattus norvegicus</em>)</td>
</tr>
<tr>
<td>Primary</td>
<td>Rabbit (<em>Oryctolagus cuniculus</em>)</td>
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<tr>
<td>Primary</td>
<td>Macaques (<em>Macaca</em> spp.)</td>
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<tr>
<td>Primary</td>
<td>Dog (<em>Canis familiaris</em>)</td>
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<tr>
<td>Primary</td>
<td>Pig (<em>Sus scrofa</em>)</td>
</tr>
<tr>
<td>Secondary</td>
<td>Zebrafish (<em>Danio rerio</em>)</td>
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<tr>
<td>Secondary</td>
<td>African clawed frog (<em>Xenopus laevis</em> and <em>Xenopus tropicalis</em>)</td>
</tr>
<tr>
<td>Secondary</td>
<td>Cat (<em>Felis domestica</em>)</td>
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<tr>
<td>Secondary</td>
<td>Guinea pig (<em>Cavia porcellus</em>)</td>
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<tr>
<td>Secondary</td>
<td>Ferret (<em>Mustela putorius furo</em>)</td>
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<tr>
<td>Secondary</td>
<td>Squirrel monkey (<em>Saimiri sciureus</em>)</td>
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<tr>
<td>Secondary</td>
<td>Sheep (<em>Ovis aries</em>)</td>
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<tr>
<td>Secondary</td>
<td>Syrian hamster (<em>Mesocricetus auratus</em>)</td>
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<tr>
<td>Secondary</td>
<td>Baboon (<em>Papio</em> spp.)</td>
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<tr>
<td>Secondary</td>
<td>Marmoset/tamarins (<em>Callitrichidae</em>)</td>
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<tr>
<td>Secondary</td>
<td>Gerbil (<em>Meriones</em> spp.)</td>
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<tr>
<td>Secondary</td>
<td>Goat (<em>Capra hircus</em>)</td>
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<tr>
<td>Tertiary</td>
<td>Other rodents</td>
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<tr>
<td>Tertiary</td>
<td>Chicken (<em>Gallus domestic</em>)</td>
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<tr>
<td>Tertiary</td>
<td>Other nonhuman primates</td>
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<tr>
<td>Tertiary</td>
<td>Other mammals</td>
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<tr>
<td>Tertiary</td>
<td>Pigeon (<em>Columba livia</em>)</td>
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<td>Tertiary</td>
<td>Other amphibians</td>
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<tr>
<td>Tertiary</td>
<td>Other livestock species including cattle and horses</td>
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<td>Tertiary</td>
<td>Other Fish</td>
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<tr>
<td>Tertiary</td>
<td>Reptiles</td>
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<tr>
<td>Tertiary</td>
<td>Other birds</td>
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<tr>
<td>Tertiary</td>
<td>Invertebrates</td>
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</tbody>
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