



**AGRICULTURE
& LIFE SCIENCES**
TEXAS A&M UNIVERSITY

UNDERGRADUATE HANDBOOK



AGLS Advising Center 7

Department of Ecology and Conservation Biology

Department of Rangeland, Wildlife and Fisheries Management

2022-2023



Department of Ecology and Conservation Biology
Department of Rangeland, Wildlife, & Fisheries
Management

2022-2023

Undergraduate Student Handbook

The purpose of this Undergraduate Student Handbook is intended to be used as a supplement to the Texas A&M University Catalog. It is to provide information and references you need to fulfill your responsibilities as a student in the Departments of ECCB & RWFM. You bear the responsibility for being fully acquainted with and complying with the rules, policies and requirements of Texas A&M University, the College of Agriculture and Life Sciences and your degree program.

You are advised to use this handbook, along with other important information sources, for guidance in the Departments of ECCB and RWFM undergraduate programs. When information regarding policies and procedures is needed, please refer to one of these publications or contact your advisor.

While every effort has been made to make this handbook as complete and accurate as possible, changes may occur at any time in requirements, deadlines and curricula listed in the handbook.



HOWDY!

Welcome to the Department of Ecology and Conservation Biology at Texas A&M University!

Our department is currently developing a new undergraduate program designed to teach fundamental concepts in ecology and related sciences as well as their applications to conservation biology. Ecology is the science that seeks understanding of patterns and processes that generate and maintain biological diversity at scales ranging from genes to organisms, populations, and communities as well as faunal regions and evolutionary lineages. Ecologists explore the distribution and abundance of animal, plant and microbial species as well as the roles of organisms in ecosystems. Ecosystems processes, such as water, nutrient and production dynamics, and the ecosystem services that maintain biodiversity and environmental health also are major areas of ecological study that have direct applications for human health and welfare. Our undergraduate curriculum assures that students attain proficiency in core disciplines, including of basic biology, chemistry, and quantitative methods. The ECCB undergraduate program emphasizes experiential learning and affords many opportunities for research experiences in Texas, the nation and internationally as well as internship and study abroad opportunities.

ECCB majors can select one of four tracks: **Ecology and Conservation Biology, Ecoinformatics, Forestry Resources, and Vertebrate Zoology.** ECCB graduates will be well-prepared for admission into top graduate and professional programs in ecology and related fields, veterinary school and careers in the fields of ecology, conservation biology, and natural resource management.

We have a close working relationship with American Fisheries Society (AFS) and the Society of American Foresters (SAF), who will serve as the accreditation bodies for this degree program. Individual tracks will position graduates to move directly into specialized fields that address emerging ecological, biological and environmental issues.



TEXAS A&M UNIVERSITY
Rangeland, Wildlife
& Fisheries Management

Welcome to the Department of Rangeland, Wildlife, & Fisheries Management at Texas A&M University!

At a time when natural resources face ever-increasing demands, Texas A&M University graduates are prepared to meet the challenges. The Department of Rangeland Wildlife and Fisheries Management is a national leader in rangeland, wildlife and fisheries management and policy to meet employment opportunities in federal or state agencies, private industry, consulting or other landowner-focused entities.

The major includes experiential learning field programs/internships in rangeland, wildlife and fisheries management to provide a firm foundation in field skills necessary for accreditation bodies like The Wildlife Society, Society of Range Management and American Fisheries Society. The undergraduate major also offers accounting/pre-business, management, law and policy electives to better prepare students. This provides students with the opportunity to develop a 3+2 program.

Degree Options

- Field-based degree in rangeland, wildlife, and fisheries management.
- Degree associated with pre-professional opportunities that will include policy, business and law.



AGLS Advising Center 7

The College of Agriculture and Life Sciences has aligned academic advising to better support students during their time at Texas A&M University. This Center supports the following departments:

- **Ecology and Conservation Biology (ECCB):** Ecology and Conservation Biology Track; Ecoinformatics Track; Forestry Resources Track; Vertebrate Zoology Track
- **Rangeland, Wildlife and Fisheries Management (RWF):** Aquaculture & Fisheries Management Track; Rangeland Management Track; Natural Resource Management & Policy Track; Wildlife Management Track



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Advising Hours: Monday—Friday

9:00 a.m. to 11:30 a.m. and 1:30 p.m. to 4:00 p.m.

Appointments are preferred. Walk-ins are designed for quick answers.

Students can schedule an appointment, go to

<https://tamu.campus.eab.com>

Student and Advisor Responsibilities

AGLS Advising Center 7 strives to enhance the student's intellectual and personal growth, to sharpen the student's decision-making skills, and to integrate the student's academic and future career plans. To do this, academic advisors and students are expected to do the following:

Academic Advisor Responsibilities—What You can Expect Me to Do

Academic advisors assist students in formulating realistic educational and professional goals and steps necessary in attaining them. As your advisor, you can expect me to:

- Protect and secure the integrity of your degree by enforcing all university and departmental policies and requirements
- Treat you with respect as an adult by listening carefully to your questions, concerns and problems
- Understand and effectively communicate the curriculum, requirements, and academic policies and procedures
- Assist you in making academic decisions consistent with your goals, interests and abilities
- Provide referrals to campus resources and services appropriate to your needs
- Monitor and accurately document your progress toward meeting your educational goals
- Maintain confidentiality (will not discuss issues with parents or non-university persons without your written permission; will respond to academic questions only via tamu.edu email accounts)

Advisee (Student) Responsibilities – What You are Expected to Do

As an advisee, you have clear responsibilities in this partnership in order to be successful:

- Be respectful by being on time, prepared and treating advisors and other students as you would wish to be treated
- Be an active learner by participating fully in the advising experience, ask questions if you do not understand an issue or have a specific concern
- Keep a personal record of your progress toward your academic goals; be open to clarifying personal values and goals
- Read all correspondence from the department and university and act accordingly
- Be proactive in checking often the electronic resources via HOWDY Portal to keep track of your academic progress (Degree Evaluation, Unofficial Transcript, Course Offerings)
- Become knowledgeable about college programs, degree requirements, policies, and procedures
- Use campus resources to enhance your academic experience and develop personal and professional goals

Ultimately, you bear responsibility for seeking adequate academic advising, for knowing and meeting degree requirements, for enrolling in appropriate courses to ensure timely progress toward degree and for making decisions consistent with your academic, personal and professional goals.

Policies and Procedures of Academic Advising

- ◆ **Your Advisor:** It is not mandatory, but highly recommended that you schedule an appointment with your advisor at least once a semester. Your advisor will discuss course options, address academic problems or concerns, make suggestions/recommendations about the upcoming semester, and explore major/minor options. If you find yourself on academic caution or probation, it will be mandatory for you to meet with your advisor prior to registration for the upcoming semester.
- ◆ **Scheduling:** Appointments are scheduled via the ENTO website.
- ◆ **Walk-Ins:** Walk-In appointments are available; however, please be aware that advisors may be committed to previously scheduled appointments and/or meetings. We will do our best to meet with you in a timely manner.
- ◆ **Cancellation of Appointments:** We recognize situations arise that may create a need to reschedule or cancel your appointment. A minimum two (2) hour prior-notification is requested. Reciprocal courtesy will be extended to students should Advisors need to cancel.
- ◆ **No Show Policy:** This policy is not meant to be punitive, but to be fair and equitable to all students. During peak advising periods, appointments are premium. If you do not notify the office two (2) hours in advance that you are unable to keep the appointment, your absence will be noted as a “no-show”. After two no-shows, you will NOT be able to schedule an appointment until after the last TAMU registration entry time.
- ◆ **Etiquette:** Please arrive five (5) minutes early for your appointment. If you are going to be late for your appointment, please notify the advising office immediately. Whether you are waiting in the ENTO advising office or meeting with your advisor, please turn off your cell phone and text messaging devices.
- ◆ **Communications Protocol:** E-Mail communication via a student’s TAMU email account is the official method of communication at Texas A&M University. Due to privacy regulations, your advisor will communicate solely through the university assigned TAMU Email Account. While some inquiries may be resolved through email correspondence, most situations benefit from scheduling a face-to-face appointment for further discussion. Also, due to privacy issues, it is preferred that you do not bring a friend into your appointment. They may wait in the waiting area.

Email Communication with Advisors

- Always use your TAMU Email address when emailing your academic advisor
- Always include your full name and TAMU UIN
- Allow at least 48 hours for a response
- Be respectful, courteous, professional and mindful of sensitive information
- Check your TAMU Email account on a daily basis. Important notices and reminders will be sent to your TAMU Email address — you are responsible for this knowledge!

Advising Tools and Resources:

- ◆ **College of Agriculture & Life Sciences Website:** <http://aglifesciences.tamu.edu/>
- ◆ **Howdy Portal:** <http://howdy.tamu.edu> (Degree Evaluation, Course Registration, Holds, Unofficial Transcript)
- ◆ **Academic Calendar:** <http://registrar.tamu.edu/Catalogs,-Policies-Procedures/Academic-Calendar>
- ◆ **University Catalog:** <http://catalog.tamu.edu/>
- ◆ **How to Calculate your GPA:** <http://registrar.tamu.edu/Transcripts-Grades/How-to-Calculate-GPA>



TEXAS A&M UNIVERSITY

Ecology &
Conservation Biology

BS– ECOLOGY AND CONSERVATION BIOLOGY CURRICULUM TRACKS

- ECOINFORMATICS
- ECOLOGY AND CONSERVATION BIOLOGY
- FOREST RESOURCES
- VERTEBRATE ZOOLOGY



TEXAS A&M
UNIVERSITY®

BS-ECCB - ECOINFOMATICS TRACK

2022-2023

First Year

| FALL | | |
|------------------------------|--|-----------|
| BIOL 111 | Introductory Biology I | 4 |
| ECCB 101 | Introduction to Ecology and Conservation Biology | 1 |
| ECCB 205 | Fundamentals of Ecology | 3 |
| MATH 140 | Mathematics for Business and Social Sciences | 3 |
| General Elective(1) | | 3 |
| Semester Credit Hours | | 14 |

| SPRING | | |
|-------------------------------------|-------------------------|-----------|
| BIOL 112 | Introductory Biology II | 4 |
| MATH 142 | Business Calculus | 3 |
| American History(2) | | 3 |
| Language, Philosophy and Culture(2) | | 3 |
| Social and Behavioral Sciences(2) | | 3 |
| Semester Credit Hours | | 16 |

Second Year

| FALL | | |
|----------------------------------|------------------------------------|-----------|
| CHEM 119 | Fundamentals of Chemistry I | 4 |
| ECCB 285 | Directed Studies | 1 |
| ECCB 302 | Natural History of the Vertebrates | 3 |
| American History(2) | | 3 |
| Ecology Practice(3) | | 2 |
| Creative Arts(2) | | 3 |
| Semester Credit Hours | | 16 |

| SPRING | | |
|---|--|-----------|
| CHEM 222 | Elements of Organic and Biological Chemistry | 3 |
| ECCB 215 | Fundamentals of ecology-Laboratory | 1 |
| ECCB 304 | Wildlife and Fisheries Conservation | 3 |
| STAT 302 | Statistical Methods | 3 |
| Government/Political Science(2) | | 3 |
| GIS and Remote Sensing(4) | | 3 |
| Semester Credit Hours | | 16 |

Third Year

| FALL | | |
|------------------------------|----------------|-----------|
| ECCB 403 | Animal Ecology | 3 |
| Life Sciences(5) | | 4 |
| Ecosystems(6) | | 3 |
| Organismal Biology(7) | | 3 |
| Communication(2) | | 3 |
| Semester Credit Hours | | 16 |

| SPRING | | |
|---------------------------------|---|-----------|
| ECCB 303 | Biogeochemistry and Global Change | 3 |
| ECCB 400 | Molecular Ecology in Wildlife and Fisheries | 3 |
| Government/Political Science(2) | | 3 |
| Ecology Practice(3) | | 3 |
| General Elective(1) | | 1 |
| Semester Credit Hours | | 13 |

Fourth Year

| FALL | | |
|----------------------------------|--------------------------|-----------|
| ECCB 301 | Rangeland Plant Taxonomy | 3 |
| Human-environment interaction(9) | | 3 |
| Communication(2) | | 3 |
| Ecology Practice(3) | | 3 |
| GIS and Remote Sensing(4) | | 3 |
| Semester Credit Hours | | 15 |

| SPRING | | |
|---|----------------------------------|-----------|
| Programming(8) | | 3 or 4 |
| ECCB 485 | Directed Studies: Senior Writing | 1 |
| GIS and Remote Sensing(4) | | 3 |
| Ethical Dimensions(10) | | 3 |
| Individual Function(11) | | 3 or 4 |
| General Elective(1) | | 1 |
| Semester Credit Hours | | 14 |

**BS-ECCB - ECOINFOMATICS TRACK
2022-2023**

| | |
|----|--|
| 1 | Select from any 100-499 course not used elsewhere |
| 2 | Graduation requirements include a requirement for 3 hours of International and Cultural Diversity courses and 3 hours of Cultural Discourse courses. A course satisfying a Core category, a college/department requirement, or a general elective can be used to satisfy |
| 3 | Select from RWFM 325, ECCB 324, ECCB 417, ECCB 484, ECCB 485, ECCB 491, RWFM 400, |
| 4 | select from ECCB 351, ECCB 444, ECCB 446, ECCB 406 |
| 5 | Select from CHEM 120, GEOL 101 & 102, OCNG 251 & 252, PHYS 201, SCSC 301 |
| 6 | ECCB 309, ECCB 320, ECCB 304 |
| 7 | Select from BESC 204, ENTO 201, ECCB 203, RWFM 302, ECCB 312, RWFM 436, ECCB 311, |
| 8 | select from CSCE 110 or ECCB 407 |
| 9 | select from RWFM 301, RWFM 314, ECCB 319, ECCB 420, RWFM 470, RWFM 443, RWFM |
| 10 | select from AGECE 350, ECCB 308, ECCB 318, ECCB 405, RWFM 436, ECCB 460, RWFM 308 |
| 11 | select from BESC 401, BIOL 318, ENTO 306, ECCB 307, ECCB 310, MEPS 313, ECCB 422, ECCB 448 |

Must make a grade of C or better in [BIOL 111](#), [BIOL 112](#), and all ECCB major core coursework ([ECCB 101](#), [ECCB 301](#), [ECCB 303](#), [ESSM 485](#), [ECCB 205](#), [ECCB 302](#), [ECCB 304](#), [ECCB 403](#), and [ECCB 400](#).)



BS-ECCB-ECOLOGY CONSERVATION BIOLOGY TRACK

2022-2023

| First Year | | | | | |
|----------------------------------|--|-----------|---|--|-----------|
| FALL | | | SPRING | | |
| BIOL 111 | Introductory Biology I | 4 | BIOL 112 | Introductory Biology II | 4 |
| ECCB 101 | Introduction to Ecology and Conservation Biology | 3 | MATH 142 | Business Calculus | 3 |
| ECCB 205 | Fundamentals of Ecology | 1 | American History(2) | | |
| MATH 140 | Mathematics for Business and Social Sciences | 3 | Language, Philosophy, and Culture(2) | | |
| General Elective(1) | | 2 | Social and Behavioral sciences(2) | | |
| Semester Credit Hours | | 13 | Semester Credit Hours | | 16 |
| Second Year | | | | | |
| FALL | | | SPRING | | |
| ECCB 302 | Natural History of the Vertebrates | 3 | CHEM 222 | Elements of Organic and Biological Chemistry | 3 |
| CHEM 119 | Fundamentals of Chemistry I | 4 | ECCB 215 | Fundamentals of Ecology - Laboratory | 1 |
| American History(2) | | 3 | STAT 302 | Statistical Methods | 3 |
| Communication(2) | | 3 | ECCB 304 | Wildlife and Fisheries Conservation | 3 |
| Creative Arts(2) | | 3 | Communication(2) | | |
| Semester Credit Hours | | 16 | Government/Political Science(2) | 3 | |
| | | | Semester Credit Hours | | 16 |
| Third Year | | | | | |
| FALL | | | SPRING | | |
| Life Science(10) | | 4 | ECCB 285 | Directed Studies | 1 |
| Ecosystem(11) | | 3 | ECCB 301 | Diversity and Evolution of Plants | 3 |
| Government/Political Science(2) | | 3 | ECCB 303 | Biogeochemistry and Global Change | 3 |
| Ecology Practice(3) | | 3 | ECCB 403 | Animal Ecology | 3 |
| General Elective(1) | | 3 | ECCB 400 | Molecular Ecology in wildlife and Fisheries | |
| Semester Credit Hours | | 16 | Ecology Practice(4) | | 2 |
| | | | Semester Credit Hours | | 15 |
| Fourth Year | | | | | |
| FALL | | | SPRING | | |
| Biodiversity(5) | | 3 | ECCB 485 | Directed Studies: Senior Writing | 1 |
| Ecology Practice(4) | | 3 | Individual Function(12) | | |
| Ecology Practice(6) | | 3 or 4 | Biodiversity(5) | | |
| Human-environment interaction(7) | | 3 | Human-environment Interaction(9) | | |
| Human-environment interaction(8) | | 3 | General elective(1) | | |
| Semester Credit Hours | | 15 | Semester Credit Hours | | 13 |

**BS-ECCB-ECOLOGY CONSERVATION BIOLOGY TRACK
2022-2023**

| | |
|----|---|
| 1 | Select from any 100-499 course not used elsewhere |
| 2 | Graduation requirements include a requirement for 3 hours of International and Cultural Diversity courses and 3 hours of Cultural Discourse courses. A course satisfying a Core category, a college/department requirement, or a general elective can be used |
| 3 | Select from RWFM 325, ECCB 324, ECCB 417, ECCB 446, ECCB 484, ECCB 485, ECCB 491, RWFM 400, ECCB 300, ECCB 314, ECCB 316, RWFM 408, RWFM 410, ECCB 415, ECCB 450, ECCB 451, ECCB 462, RWFM 485. |
| 4 | Select from RWFM 325, ECCB 324, ECCB 351, ECCB 417, ECCB 444, ECCB 446, ECCB 407, ECCB 406, ECCB 484, ECCB 485, ECCB 491, PHYS 201, PHYS 202, RWFM 400, STAT 307, ECCB 300, ECCB 314, ECCB 316, RWFM 408, RWFM 410, ECCB 415, ECCB 450, ECCB 451, ECCB 462, RWFM 485 |
| 5 | Select from BESC 204, ENTO 201, ECCB 203, RWFM 302, ECCB 312; ECCB 311, ECCB 315, ECCB 313, ECCB 401, ECCB 402. |
| 6 | Select from ECCB 351, ECCB 444, ECCB 407, ECCB 406, PHYS 201, PHYS 202, STAT 307 |
| 7 | Select from RWFM 301, RWFM 314, ECCB 319, ECCB 420, RWFM 470, RWFM 444, RWFM 447. |
| 8 | Select from AGECE 350, RWFM 301, ECCB 308, RW FM 314, ECCB 318, ECCB 319, ECCB 405, RWFM 436, ECCB 420, ECCB 460, RWFM 470, RWFM 308, RWFM 443, RWFM 447 |
| 9 | Select from AGECE 350, ECCB 308, ECCB 318, ECCB 405, RWFM 436, ECCB 460, RWFM 308. |
| 10 | Select from CHEM 120, GEOL 101 & 102, OCNG 251 & 252, PHYS 201, SCSC 301 |
| 11 | ECCB 309, ECCB 320, RWFM 404 |
| 12 | select from BESC 401, BIOL 318, ENTO 306, ECCB 307, ECCB 310, MEPS 313, ECCB 422, ECCB 448 |

Must make a grade of C or better in [BIOL 111](#), [BIOL 112](#), and all ECCB major core coursework([ECCB 101](#), [ECCB 301](#), [ECCB 303](#), [ESSM 485](#), [ECCB 205](#), [ECCB 302](#), [ECCB 304](#), [ECCB 403](#), and [ECCB 400](#).)

BS-ECCB-VERTEBRATE ZOOLOGY TRACK

2022-2023

| First Year | | | |
|-------------------------------------|--|-----------|--|
| FALL | | | |
| BIOL 111 | Introductory Biology I | 4 | |
| ECCB 101 | Introduction to Ecology and Conservation Biology | 1 | |
| ECCB 205 | Fundamentals of Ecology | 3 | |
| MATH 140 | Mathematics for Business and Social Sciences | 3 | |
| General Elective(1) | | 3 | |
| Semester Credit Hours | | 14 | |
| SPRING | | | |
| BIOL 112 | Introductory Biology II | 4 | |
| MATH 142 | Business Calculus | 3 | |
| American History(2) | | 3 | |
| Language, Philosophy and Culture(2) | | 3 | |
| Social and Behavioral Sciences(2) | | 3 | |
| Semester Credit Hours | | 16 | |

| Second Year | | | |
|-------------------------------------|--|-----------|--|
| FALL | | | |
| CHEM 119 | Fundamentals of Chemistry I | 4 | |
| ECCB 285 | Directed Studies | 1 | |
| ECCB 302 | Natural History of the Vertebrates | 3 | |
| STAT 302 | Statistical Methods | 3 | |
| ECCB 215 | Fundamentals of Ecology-Laboratory | 1 | |
| American History(2) | | 3 | |
| Semester Credit Hours | | 15 | |
| SPRING | | | |
| CHEM 222 | Elements of Organic and Biological Chemistry | 3 | |
| ECCB 304 | Wildlife and Fisheries Conservation | 3 | |
| Biodiversity(3) | | 3 | |
| Government/Political Science(2) | | 3 | |
| Communication(2) | | 3 | |
| Semester Credit Hours | | 15 | |

| Third Year | | | |
|----------------------------------|-----------------------------------|-----------|--|
| FALL | | | |
| ECCB 403 | Animal Ecology | 3 | |
| Life Sciences(6) | | 4 | |
| Ecosystems(7) | | 3 | |
| Creative Arts(2) | | 3 | |
| Government/Political Sciences(2) | | 3 | |
| Semester Credit Hours | | 16 | |
| SPRING | | | |
| ECCB 303 | Biogeochemistry and Global Change | 3 | |
| ECCB 301 | Rangeland Plant Taxonomy | 3 | |
| Communication(2) | | 3 | |
| Ecology Practice(4) | | 3 | |
| Professional Development(5) | | 3 | |
| Semester Credit Hours | | 15 | |

| Fourth Year | | | |
|---|---|-----------|--|
| FALL | | | |
| ECCB 400 | Molecular Ecology in Wildlife and Fisheries | 3 | |
| Biodiversity(3) | | 3 | |
| Ecology Practice(4) | | 4 | |
| Professional Development(5) | | 3 | |
| General Elective(1) | | 3 | |
| Semester Credit Hours | | 15 | |
| SPRING | | | |
| ECCB 485 | Directed Studies: Senior Writing | 1 | |
| Professional Development(5) | | 3 | |
| Ethical Dimensions(8) | | 3 | |
| Individual Function(9) | | 3 or 4 | |
| General Elective(1) | | 1 | |
| Semester Credit Hours | | 14 | |

**BS-ECCB-VERTEBRATE ZOOLOGY TRACK
2022-2023**

| | |
|---|---|
| 1 | Select from any 100-499 course not used elsewhere |
| 2 | Graduation requirements include a requirement for 3 hours of International and Cultural Diversity courses and 3 hours of Cultural Discourse courses. A course satisfying a Core category, a college/department requirement, or a general elective can be used to satisfy this requirement |
| 3 | Select from ECCB 311, ECCB 315, ECCB 401, ECCB 402 |
| 4 | Select from RWFM 325, ECCB 324, ECCB 351, ECCB 417, ECCB 444, ECCB 446, ECCB 407, ECCB 406, ECCB 484, ESSM 485, ECCB 491, ECCB 314, ECCB 316, MARB 415/ECCB 415, PHYS 201, PHYS 202, RWFM 400, STAT 307, ECCB 462, ENTO 300/WFSC 300, ENTO 450/ECCB 450, ENTO 451/ECCB 451, RWFM 408, RWFM 410, RWFM 484, RWFM 485, RWFM 491. |
| 5 | Select from ANSC 303/NUTR 303, ANSC 318, ANSC 320; CHEM 227 & CHEM 237, CHEM 228 & CHEM 238; ENTO 201, ECCB 203, RWFM 301, RWFM 302, ECCB 312, RWFM 314, ECCB 420, OCNB 251, RWFM 470, ECCB 311, ECCB 315, ECCB 313, EC CB 401, ECCB 402, RWFM 443, RWFM 447. |
| 6 | Select from CHEM 120, GEOL 101 & 102, OCNB 251 & 252, PHYS 201, SCSC 301 |
| 7 | ECCB 309, ECCB 320, ECCB 304 |
| 8 | select from AGECE 350, ECCB 308, ECCB 318, ECCB 405, RWFM 436, ECCB 460, RWFM 308 |
| 9 | select from BESC 401, BIOL 318, ENTO 306, ECCB 307, ECCB 310, MEPS 313, ECCB 422, ECCB 448 |

Must make a grade of C or better in **BIOL 111**, **BIOL 112**, and all ECCB major core coursework (**ECCB 101**, **ECCB 301**, **ECCB 303**, **ESSM 485**, **ECCB 205**, **ECCB 302**, **ECCB 304**, **ECCB 403**, and **ECCB 400**.)



BS-ECCB-FORESTRY RESOURCES TRACK

2022-2023

| First Year | | | |
|--------------------------------------|--|--|-----------|
| FALL | | | |
| BIOL 111 | Introductory Biology I | | 4 |
| ECCB 101 | Introduction to Ecology and Conservation Biology | | 3 |
| ECCB 205 | Fundamentals of Ecology | | 1 |
| MATH 140 | Mathematics for Business and Social Sciences | | 3 |
| General Elective(1) | | | 2 |
| Semester Credit Hours | | | 13 |
| SPRING | | | |
| BIOL 112 | Introductory Biology II | | 4 |
| MATH 142 | Business Calculus | | 3 |
| American History(2) | | | 3 |
| Language, Philosophy, and Culture(2) | | | 3 |
| Social and Behavioral sciences(2) | | | 3 |
| Semester Credit Hours | | | 16 |

| Second Year | | | |
|---|--|--|-----------|
| FALL | | | |
| ECCB 302 | Natural History of the Vertebrates | | 3 |
| ECCB 203 | Forest Trees of North America | | 3 |
| CHEM 119 | Fundamentals of Chemistry I | | 4 |
| American History(2) | | | 3 |
| Creative Arts(2) | | | 3 |
| Semester Credit Hours | | | 16 |
| SPRING | | | |
| CHEM 222 | Elements of Organic and Biological Chemistry | | 3 |
| ECCB 215 | Fundamentals of Ecology - Laboratory | | 1 |
| STAT 302 | Statistical Methods | | 3 |
| ECCB 310 | Forest Tree Improvement and Regeneration | | 3 |
| ECCB 304 | Wildlife and Fisheries Conservation | | 3 |
| Government/Political Science(2) | | | 3 |
| Semester Credit Hours | | | 16 |

| Third Year | | | |
|---------------------------------|--|--|-----------|
| FALL | | | |
| ECCB 309 | Forest Ecology | | 3 |
| ECCB 351 | Geographic Information Systems for Resource Management | | 3 |
| ECCB 403 | Animal Ecology | | 3 |
| SCSC 301 | Soil Science | | 4 |
| Communication(2) | | | 3 |
| Semester Credit Hours | | | 16 |
| SPRING | | | |
| AGEC 350 | Environmental and Natural Resources Economics | | 3 |
| ECCB 301 | Diversity and Evolution of Plants | | 3 |
| ECCB 303 | Biogeochemistry and Global Change | | 3 |
| ECCB 324 | Forest Measurements | | 2 |
| Government/Political Science(2) | | | 3 |
| Semester Credit Hours | | | 14 |

| Fourth Year | | | |
|------------------------------|---|--|-----------|
| FALL | | | |
| ECCB 325 | Field Studies in Forest Ecosystems | | 3 |
| ECCB 319 | Principles of Ecology | | 3 |
| RWFM 436 | Natural Resources Policy | | 3 |
| ECCB 444 | Remote Sensing of the Environment | | 3 |
| ECCB 400 | Molecular Ecology in Wildlife and Fisheries | | 3 |
| Semester Credit Hours | | | 15 |
| SPRING | | | |
| ECCB 485 | Directed Studies: Senior Writing | | 1 |
| ECCB 307 | Forest Protection | | 3 |
| ECCB 405 | Forest Resource Assessment and Management | | 3 |
| Communication(2) | | | 3 |
| General elective(1) | | | 3 |
| Semester Credit Hours | | | 13 |

BS-ECCB-FORESTRY RESOURCES TRACK

2022-2023

| | |
|---|---|
| 1 | Select from any 100-499 course not used elsewhere |
| 2 | Graduation requirements include a requirement for 3 hours of International and Cultural Diversity courses and 3 hours of Cultural Discourse courses. A course satisfying a Core category, a college/department requirement, or a general elective can be used to satisfy this requirement |

Must make a grade of C or better in [BIOL 111](#), [BIOL 112](#), and all ECCB major core



TEXAS A&M UNIVERSITY

Rangeland, Wildlife
& Fisheries Management

BS– RANGELAND, WILDLIFE, & FISHERIES MANAGEMENT CURRICULUM TRACKS

- AQUACULTURE & FISHERIES MANAGEMENT
- NATURAL RESOURCE MANAGEMENT & POLICY
- RANGELAND MANAGEMENT
- WILDLIFE MANAGEMENT

BS-RWFM - AQUACULTURE AND FISERIES MANAGEMENT TRACK
CATALOG 145 (22-23)

| First Year | | | | | | | |
|--------------------------|--|------------------------------|-----------|--------------------------|-----------------------------|------------------------------|-----------|
| FALL | | | | SPRING | | | |
| BIOL 111 | Introductory Biology I | 4 | | BIOL 112 | Introductory Biology II | 4 | |
| MATH 140 | Mathematics for Business and Social Sciences | 3 | | MATH 142 | Business Calculus | 3 | |
| AGEC 105 | Introduction to Agricultural Economics | 3 | | COMM 203 | Public Speaking | 3 | |
| ENGL 210 | Technical and Business Writing | 3 | | ECCB 205 | Fundamentals of Ecology | 3 | |
| RWFM 101 | Exploring Rangeland, Wildlife and Fisheries Management | 1 | | ECCB 215 | Fundamentals of Ecology Lab | 1 | |
| | | | | | | | |
| | | Semester Credit Hours | 14 | | | Semester Credit Hours | 14 |

| Second Year | | | | | | | |
|--------------------------|-----------------------------------|------------------------------|-----------|--------------------------|---|--|-----------|
| FALL | | | | SPRING | | | |
| CHEM 119 | Fundamentals of Chemistry I | 4 | | CHEM 222 | Elements of Organic and Biological | 3 | |
| HIST 105 | History of United States | 3 | | HIST 106 | History of United States | 3 | |
| RWFM 202 | Concepts in Applied Plant Biology | 3 | | POLS 207 | State Government | 3 | |
| POLS 206 | National Government | 3 | | RWFM 305 | Principles and Practices of Wildlife and Fisheries Management | 3 | |
| | | | | | | | |
| | | Semester Credit Hours | 16 | | | Language, Philosophy and Culture Elective ^a | 3 |
| | | | | | | Semester Credit Hours | 15 |

| Summer | | | |
|--------------------------|--|------------------------------|----------|
| RWFM 333 | Rangeland, Wildlife and Fisheries Field Techniques | | 3 |
| | | Semester Credit Hours | 3 |

| Third Year | | | | | | | |
|--------------------------|--|------------------------------|-----------|--------------------------|---|------------------------------|-----------|
| FALL | | | | SPRING | | | |
| ECCB 313 | Diversity and Evolution of | 3 | | AGEC 325 | Farm and Ranch Management | 3 | |
| ECCB 302 | Diversity and Evolution of Vertebrates | 3 | | RWFM 308 | Wildlife Laws and Administration | 3 | |
| STAT 302 | Statistical Methods | 3 | | RWFM 314 | Principles of Rangeland Management Around the World | 3 | |
| RWFM 321 | Communicating Natural Resources | 3 | | RWFM 371 | Pond and Small Impoundment | 3 | |
| RWFM 370 | Aquatic Vegetation Management | 2 | | RWFM 443 | Aquaculture I: Principles and Practices | 3 | |
| | | | | | | | |
| | | Semester Credit Hours | 14 | | | Semester Credit Hours | 15 |

| Fourth Year | | | | | | | |
|--------------------------|---|------------------------------|-----------|--------------------------|---------------------------------|------------------------------|-----------|
| FALL | | | | SPRING | | | |
| RWFM 410 | Principles of Fisheries Management | 4 | | RWFM 444 | Aquaculture Hatchery Management | 3 | |
| RWFM 447 | Aquaculture II: Aquatic Animal Nutrition, Feeding and Disease | 3 | | RWFM 481 | Senior Seminar | 1 | |
| ECCB 311 | Ichthyology | 3 | | RWFM 404 | Aquatic Ecosystems | 3 | |
| RWFM 375 | Conservation of Natural Resources | 3 | | RWFM 445 | Fish Health and Diseases | 3 | |
| RWFM 351 | GIS for Resource Management | 3 | | RWFM 446 | Fish Physiology | 3 | |
| | | | | | | | |
| | | Semester Credit Hours | 16 | | | Semester Credit Hours | 13 |

Graduation Requirements

- Complete the University Core Curriculum. Core Curriculum courses are listed on the [University Core Curriculum](http://core.tamu.edu) page. For additional information, please reference <http://core.tamu.edu>
- Complete the Foreign Language requirement. A minimum of one year of foreign language is required for all baccalaureate degree programs at Texas A&M. For many programs, this degree requirement can be satisfied by the satisfactory completion of two units of the same foreign language at the high school level or one year of the same language at the college level.
- Complete the Writing requirement. The requirement may be met by passing two writing (W) courses or one writing (W) course and one oral communication (C) course in the student's major.
- Graduation requirements include a requirement for 3 hours of International and Cultural Diversity courses and 3 hours of Cultural Discourse courses. A course satisfying a Core category, a college/department requirement, or a free elective can be used to satisfy this requirement. Select in consultation with an academic advisor.
- Students must take one course (3 credit hours) from the list available on the [International and Cultural Diversity Requirement](http://icd.tamu.edu) page. For additional information, please reference <http://icd.tamu.edu>.

RWFM - RANGELAND MANAGEMENT TRACK

CATALOG 145 (22-23)

| First Year | | | |
|---|--|------------------------------|-----------|
| FALL | | | |
| ENGL 104 | Composition and Rhetoric | 3 | |
| RWFM 101 | Exploring Rangeland, Wildlife and Fisheries Management | 1 | |
| MATH 140 | Mathematics for Business and Social | 3 | |
| AGEC 105 | Introduction to Agriculture Economics | 3 | |
| Life and Physical Sciences* | | 4 | |
| | | Semester Credit Hours | 14 |
| SPRING | | | |
| ENGL 210 | Technical and Professional Writing | | 3 |
| or COMM 203 | or Public Speaking | | |
| ECCB 205 | Fundamentals of Ecology | | 3 |
| ECCB 215 | Fundamentals of Ecology Lab | | 1 |
| MATH 142 | Business Calculus | | 3 |
| Life and Physical Sciences* | | | 4 |
| | | Semester Credit Hours | 14 |

| Second Year | | | |
|---------------------------------|---|------------------------------|-----------|
| FALL | | | |
| CHEM 119 | Chemistry 1 | 4 | |
| HIST 105 | History of United States | 3 | |
| POLS 206 | National Government | 3 | |
| Creative Arts** | | 3 | |
| | | Semester Credit Hours | 16 |
| SPRING | | | |
| RWFM 202 | Concepts in Applied Plant Biology | | 3 |
| HIST 106 | History of United States | | 3 |
| POLS 207 | State and Local Government ² | | 3 |
| | Language, Philosophy and Culture Elective** | | 3 |
| | Directed Elective | | 3 |
| | | Semester Credit Hours | 15 |

| SUMMER | | | |
|--------------------------|--|------------------------------|----------|
| RWFM 333 | Rangeland, Wildlife and Fisheries Field Techniques | | 3 |
| | | Semester Credit hours | 3 |

| Third Year | | | |
|--|---|------------------------------|-----------|
| FALL | | | |
| SCSC 301 | Soil Science | 4 | |
| RWFM 308 | Wildlife Laws & Administration | 3 | |
| RWFM 314 | Principles of Rangeland Management Around the World | 3 | |
| RWFM 302 | Wildland Plants of North America | 3 | |
| Directed Elective | | 3 | |
| | | Semester Credit Hours | 16 |
| SPRING | | | |
| STAT 302 | Statistical Methods | | 3 |
| RWFM 301 | Wildland Watershed Management | | 3 |
| RWFM 313 | Rangeland Inventory and Monitoring | | 3 |
| RWFM 321 | Communicating Natural Resources | | 3 |
| Rangeland Reclamation*** | | | 3 |
| | | Semester Credit Hours | 15 |

| Fourth Year | | | |
|-------------------------------------|-----------------------------------|------------------------------|-----------|
| FALL | | | |
| ECCB 312 | Agrostology | 3 | |
| RWFM 316 | Rangeland Ecology | 3 | |
| RWFM 481 | Senior Seminar | 1 | |
| Land Management**** | | 4 | |
| Directed elective | | 3 | |
| | | Semester Credit Hours | 14 |
| SPRING | | | |
| AGEC 325 | Farm and Ranch Management | | 3 |
| RWFM 351 | GIS for Resource Management | | 3 |
| RWFM 375 | Conservation of Natural Resources | | 3 |
| RWFM 484 | Internship | | 1 |
| Directed elective | | | 3 |
| | | Semester Credit Hours | 13 |

Choose 12-13 SCH from below
RWFM 401, RWFM 349, ECCB 416, ANSC 107, ANSC 108, RWFM 406, RWFM 440, AGECE 340, AGECE 350, ECCB 304, SCSC 310

- Graduation Requirements**
- Complete the University Core Curriculum. Core Curriculum courses are listed on the [University Core Curriculum](#) page. For additional information, please reference <http://core.tamu.edu>
 - Complete the Foreign Language requirement. A minimum of one year of foreign language is required for all baccalaureate degree programs at Texas A&M. For many programs, this degree requirement can be satisfied by the satisfactory completion of two units of the same foreign language at the high school level or one year of the same language at the college level.
 - Complete the Writing requirement. The requirement may be met by passing two writing (W) courses or one writing (W) course and one oral communication (C) course in the student's major.
 - Complete the International and Cultural Diversity and Cultural Discourse requirements (6 credit hours).
 - Students must take one course (3 credit hours) from the list available on the International and [Cultural Diversity Requirement](#) page. For additional information, please reference <http://icd.tamu.edu>.

RWFM - NATURAL RESOURCES MANAGEMENT AND POLICY TRACK
CATALOG 145 (22-23)

| First Year | | | | | | | |
|------------------------------|--|-----------|--|------------------------------|--------------------------------------|-----------|--|
| FALL | | | | SPRING | | | |
| AGEC 105 | Introduction to Agricultural Economics | 3 | | ENGL 210 | Technical and Professional Writing | 3 | |
| ENGL 104 | Composition and Rhetoric | 3 | | or COMM 203 | or Public Speaking | | |
| RwFM 101 | Exploring Rangeland, Wildlife and Fisheries Management | 1 | | MATH 142 | Business Calculus | 3 | |
| MATH 140 | Mathematics for Business and Social Sciences | 3 | | ECCB 205 | Fundamentals of Ecology | 3 | |
| Life and Physical Sciences* | | 4 | | ECCB 215 | Fundamentals of Ecology-- Laboratory | 1 | |
| Semester Credit Hours | | 14 | | Life and Physical Sciences* | | 4 | |
| | | | | Semester Credit Hours | | 14 | |

| Second Year | | | | | | | |
|---------------------------------|--|-----------|--|---|---|-----------|--|
| FALL | | | | SPRING | | | |
| POLS 206 | National Government | 3 | | HIST 106 | History of United States | 3 | |
| RwFM 305 | Principles and Practices of Wildlife and Fisheries | 3 | | POLS 207 | State and Local Government ² | 3 | |
| HIST 105 | History of United States | 3 | | RwFM 202 | Concepts in Applied Plant | 3 | |
| CHEM 119 | Chemistry I | 4 | | Language, Philosophy and Culture Elective** | | 3 | |
| Creative Arts** | | 3 | | Directed Elective | | 3 | |
| Semester Credit Hours | | 16 | | Semester Credit Hours | | 15 | |

| Summer | | | | | | | |
|--------------------------|--|---|--|------------------------------|--|----------|--|
| RwFM 333 | Rangeland, Wildlife and Fisheries Field Techniques | 3 | | Semester Credit Hours | | 3 | |

| Third Year | | | | | | | |
|------------------------------|--|-----------|--|------------------------------|--|-----------|--|
| FALL | | | | SPRING | | | |
| RwFM 345 | Human Dimensions of Natural Resources Management and | 3 | | STAT 302 | Statistical Methods | 3 | |
| RwFM 308 | Wildlife Laws & Administration | 3 | | RwFM 322 | Foundations of Community and Community Development | 3 | |
| RwFM 314 | Principles of Rangeland Management Around the world | 3 | | RwFM 321 | Communicating Natural Resources | 3 | |
| RwFM 323 | Parks and Protected Area Management | 3 | | RPTS 336 | Research and Analysis in Recreation and Tourism | 3 | |
| RwFM 318 | Coupled Social Ecological | 3 | | AGEC 325 | Farm and Ranch Management | 3 | |
| Semester Credit Hours | | 15 | | Semester Credit Hours | | 15 | |

| Fourth Year | | | | | | | |
|------------------------------|------------------------------|-----------|--|------------------------------|-------------------------|-----------|--|
| FALL | | | | SPRING | | | |
| RwFM 436 | Natural Resources Policy | 3 | | RwFM 375 | Conservation of Natural | 3 | |
| RwFM 351 | GIS for Resources Management | 3 | | RwFM 481 | Senior Seminar | 1 | |
| RwFM 460 | Nature, Value, and Protected | 3 | | RwFM 461 | Community-based | 3 | |
| RwFM 484 | Internship | 1 | | Directed elective | | 6 | |
| Directed Elective | | 5 | | Semester Credit Hours | | 13 | |
| Semester Credit Hours | | 15 | | | | | |

| Choose up 15 SCH from below | |
|--|---|
| RwFM 346, RwFM 400, RwFM 411, RPTS 307, RPTS 340, SOCI/RPTS 404, SOCI 311, SOCI 312, SOCI 328, BESC 367, GEOS 210, GEOG 430, AGECE 344, AGECE 350, AGECE 422, URPN 460, ECCB 308 | |
| * | must choose 8 hours from BIOL 107, Biol 111, BIOL 112, or HORT 201/202; one additional hour must be |
| ** | see course offerings at core.tamu.edu |

¹Select any 100-499 course not used elsewhere.

²Graduation requirements include a requirement for 3 hours of [International and Cultural Diversity](#) courses and 3 hours of [Cultural Discourse](#) courses. 3A course satisfying a Core category, a college/department requirement, or a free elective can be used to satisfy this requirement.

RWFM - NATURAL RESOURCES MANAGEMENT AND POLICY TRACK
CATALOG 145 (22-23)

Graduation Requirements

- a. Complete the University Core Curriculum. Core Curriculum courses are listed on the [University Core Curriculum page](#). For additional information, please reference <http://core.tamu.edu>
- b. Complete the Foreign Language requirement. A minimum of one year of foreign language is required for all baccalaureate degree programs at Texas A&M. For many programs, this degree requirement can be satisfied by the satisfactory completion of two units of the same foreign language at the high school level or one year of the same
- c. Complete the Writing requirement. The requirement may be met by passing two writing (W) courses or one writing (W) course and one oral communication (C) course in the student's major.
- d. Students must take one course (3 credit hours) from the list available on the International and [Cultural Diversity Requirement page](#). For additional information, please reference <http://icd.tamu.edu>.



**RWFM - WILDLIFE MANAGEMENT TRACK
CATALOG 144 (21-22)**

| First Year | | | |
|-----------------------------|--|------------------------------|-----------|
| FALL | | | |
| BIOL 111 | Introductory Biology I | 4 | |
| ENGL 104 | Composition and Rhetoric | 3 | |
| RWFM 101 | Exploring Rangeland, Wildlife and Fisheries Management | 1 | |
| MATH 140 | Mathematics for Business and Social Sciences | 3 | |
| AGEC 105 | Introduction to Agriculture | 3 | |
| | | Semester Credit Hours | 14 |
| SPRING | | | |
| BIOL 112 | Introductory Biology II | 4 | |
| ENGL 210 | Technical and Professional Writing | | 3 |
| or COMM 203 | or Public Speaking | | |
| MATH 142 | Business Calculus | | 3 |
| ECCB 205 | Fundamentals of Ecology | | 3 |
| ECCB 215 | Fundamentals of Ecology--Laboratory | | 1 |
| | | Semester Credit Hours | 14 |

| Second Year | | | |
|--|---|------------------------------|-----------|
| FALL | | | |
| POLS 206 | American National Government ¹ | 3 | |
| CHEM 119 | Chemistry I | 4 | |
| HIST 105 | History of United States | 3 | |
| RWFM 202 | Concepts in Applied Plant Biology | 3 | |
| Creative Arts* | | 3 | |
| | | Semester Credit Hours | 16 |
| SPRING | | | |
| HIST 106 | History of United States | | 3 |
| CHEM 222 | Elements of Organic and Biological Chemistry | | 3 |
| POLS 207 | State Government | | 3 |
| RWFM 305 | Principles and Practices of Wildlife and Fisheries Management | | 3 |
| Language, Philosophy and Culture Elective* | | | 3 |
| | | Semester Credit Hours | 15 |

| SUMMER | | | |
|--------------------------|-----------------------------------|------------------------------|----------|
| RWFM 333 | Rangeland, Wildlife and Fisheries | | 3 |
| | | Semester Credit Hours | 3 |

| Third Year | | | |
|---------------------------------|---|------------------------------|-----------|
| FALL | | | |
| RWFM 351 | GIS for Resource Management | 3 | |
| ECCB 302 | Diversity and Evolution of | 3 | |
| STAT 302 | Statistical Methods | 3 | |
| RWFM 321 | Communicating Natural Resources | 3 | |
| Botany** | | 3 | |
| | | Semester Credit Hours | 15 |
| SPRING | | | |
| RWFM 350 | Wildlife Population Dynamics | | 3 |
| RWFM 308 | Wildlife Laws & Administration | | 3 |
| RWFM 314 | Principles of Rangeland Management Around the World | | 3 |
| SCSC 301 | Soil Science | | 4 |
| Biodiversity*** | | | 3 |
| | | Semester Credit Hours | 16 |

| Fourth Year | | | |
|--|-----------------------------------|------------------------------|-----------|
| FALL | | | |
| RWFM 484 | Internship | 1 | |
| RWFM 375 | Conservation of Natural Resources | 3 | |
| RWFM 406 | Habitat Wildlife Management | 3 | |
| Biodiversity*** | | 3 | |
| Wildlife Management**** | | 3 | |
| Free Elective | | 1 | |
| | | Semester Credit Hours | 14 |
| SPRING | | | |
| AGEC 325 | Farm and Ranch Management | | 3 |
| RWFM 481 | Senior Seminar | | 1 |
| RWFM 408 | Techniques in Wildlife Management | | 3 |
| Advanced Wildlife Biology***** | | | 3 |
| Wildlife Management**** | | | 3 |
| | | Semester Credit Hours | 13 |

| | |
|--|---|
| Botany** - | Choose 1 from ECCB 203 (Forest Trees of North America), RWFM 302 (Wildland Plants of North America), or ECCB 312 (Agrostology) |
| Biodiversity*** - | Choose 2 from ECCB 315 (Herpetology), ECCB 401 (Mammology), ECCB 402 (Ornithology) |
| Wildlife Management**** - | Choose 2 from RWFM 421 (Upland Bird Management), RWFM 422 (Large Mammal Management), RWFM 423 (Waterfowl and Wetland Management), RWFM 424 (Wildlife Damage Management), RWFM 425 (Carnivore Management), RWFM 309 (Wildlife Diseases), RWFM 405 (Urban Wildlife and Fisheries), or RWFM 419 (Wildlife Restoration) |
| Advanced Wildlife Biology***** - | Choose 1 from RWFM 349 (Rangeland and Wildlife Animal Nutrition), RWFM 354 (Wildlife Anatomy and Physiology), or ECCB 313 (Diversity and Evolution of Invertebrates) |

RWFM - WILDLIFE MANAGEMENT TRACK
CATALOG 144 (21-22)

Graduation Requirements

- a. Complete the University Core Curriculum. Core Curriculum courses are listed on the [University Core Curriculum](http://core.tamu.edu) page. For additional information, please reference <http://core.tamu.edu>
- b. Complete the Foreign Language requirement. A minimum of one year of foreign language is required for all baccalaureate degree programs at Texas A&M. For many programs, this degree requirement can be satisfied by the satisfactory completion of two units of the same foreign language at the high school level or one year of the same language at the college level.
- c. Complete the Writing requirement. The requirement may be met by passing two writing (W) courses or one writing (W) course and one oral communication (C) course in the student's major.
- d. Complete the International and Cultural Diversity and Cultural Discourse requirements (6 credit hours).
- e. Students must take one course (3 credit hours) from the list available on the International and [Cultural Diversity Requirement](http://icd.tamu.edu) page. For additional information, please reference <http://icd.tamu.edu>.



Ecology & Conservation Biology Course Descriptions

ECCB 101 Introduction to Ecology and Conservation Biology

Credit 1. 1 Lecture Hour.

Introduction to professional opportunities and activities in the areas of ecology and conservation biology; presentation of a variety of career options focusing on job descriptions, educational and training requirements, challenges, professional societies and opportunities for advancement; overview of departmental and campus resources that will assist with their collegiate goals including research, internships, resumé building and professional writing.

Prerequisite: Freshman classification and ECCB major, or approval of instructor.

ECCB 203 Forest Trees of North America

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Taxonomy, phylogeny, and identification of the important forest trees of North America and their ecological and social uses and benefits.

Prerequisites: [BIOL 101](#), [BIOL 107](#), [BIOL 111](#) or [BIOL 113](#) and BIOL 123 or equivalent.

ECCB 205 Fundamentals of Ecology

Credits 3. 3 Lecture Hours.

Principles of ecology using a holistic approach treating plants, animals and humans as one integrated whole; composition, structure, nutrient cycles and energetics of biotic communities; adaptations to environmental factors; biotic relationships; and problems of environmental quality and resource use.

ECCB 215 Fundamentals of Ecology--Laboratory

Credit 1. 3 Lab Hours.

Sampling and estimating plant-animal populations, measuring environmental factors and recognizing and studying morphological, physiological and behavioral adaptations of plants and animals to biotic or abiotic influences.

ECCB 285 Directed Studies

Credit 1. 0 Lecture Hours. 1 Other Hour.

Directed study of selected problems in an area of ecology and conservation biology not covered in other courses.

Prerequisite: [ECCB 101](#), ECCB 205, and ECCB 215.

ECCB 300/ENTO 300 Field Studies

Credits 3. 3 Other Hours.

Integration of principles of animal and plant ecology with environmental factors to characterize wildlife populations; intensive analysis of specific areas will emphasize either the development of a wildlife management plan or a general vertebrate natural history survey.

Prerequisites: Prior approval of instructor and concurrent enrollment in [ECCB 450/ENTO 450](#) and [ECCB 451/ENTO 451](#).

Cross Listing: [ENTO 300/ECCB 300](#).

ECCB 301 Diversity and Evolution of Plants

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Interpretation of plant morphology for keying and identification of important flowering rangeland plants; vegetative and floral characters for important plant families including toxic compounds affecting domestic livestock. Plant collection required.

ECCB 302 Diversity and Evolution of Vertebrates

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Diversity and Evolution. Life histories of fishes, amphibians, reptiles, birds and mammals; lecture covers vertebrate groups on a worldwide scale and emphasizes a comparative approach to the study of adaptation to the environment; lecture topics include behavior, reproduction, feeding specializations, evolutionary history, locomotion, hibernation, migration, endangered species, zoogeography and importance to man; laboratory emphasizes the recognition of Texas vertebrates. Designed for both science and non-science majors.

Prerequisites: Grade of C or better in [BIOL 111](#) and [BIOL 112](#) or [BIOL 101](#) and [BIOL 107](#) or equivalent.

ECCB 303 Fire Ecology and Biogeochemistry**Credits 3. 3 Lecture Hours.**

Cycling of the elements like carbon, nitrogen and phosphorus, and their influence on ecosystem functions and the climate system; human impacts on biogeochemistry; global changes that threaten the sustainability of ecosystem services; wildland fire science and fire ecology showing the interrelated nature of the climate system, vegetation and human activities; classic and current scientific literature.

Prerequisites: Grade of a C or better in ECCB 205, [BIOL 111](#), or [BIOL 112](#); junior or senior classification or instructor approval.

ECCB 304 Conservation Biology**Credits 3. 3 Lecture Hours.**

Ecological principles used to conserve and manage wildlife and fisheries resources at the individual, population and community levels; topics include conservation biology, species interactions, animal-habitat relationships, population dynamics and harvesting, habitat management and restoration and human dimensions of fish and wildlife conservation.

Prerequisites: Grade of C or better in ECCB 205 and junior or senior classification or approval of instructor.

ECCB 307 Forest Protection**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Destructive agents in forestry as related to importance, identification, cause, extent of losses and protective measures.

Prerequisites: [ECCB 205](#), or equivalent, junior or senior classification or approval of instructor.

ECCB 308 Fundamentals of Environmental Decision-Making**Credits 3. 3 Lecture Hours.**

Introduction to environmental issues in natural resources management; fundamental principles and methods for understanding biosocial interdependencies in complex environmental issues; use of computer-aided group decision-making techniques to develop cooperative strategies for resolving local or global environmental issues.

Prerequisites: Junior or senior classification or approval of instructor.

ECCB 309 Forest Ecology**Credits 3. 3 Lecture Hours.**

Life history and general characteristics of trees; structure and function of forest ecosystems; fundamental principles of forest tree physiology and ecology applied to an analysis of tree growth in relation to environmental factors and present day forest management; global changes and forests.

Prerequisites: Junior or senior classification or approval of instructor.

ECCB 310 Forest Tree Physiology and Breeding**Credits 3. 3 Lecture Hours.**

Genetic improvement or manipulation of forest trees through breeding or transformation; regeneration of forests including reproduction, nursery production, stand establishment, natural regeneration and problems affecting regeneration.

Prerequisites: Grade of a C or better

ECCB 311 Ichthyology**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Introduction to the study of fishes, their biology, classification, evolution, distribution, ecology and economic importance.

Prerequisites: Grade of C or better in [ECCB 302](#) or [BIOL 318](#).

ECCB 312 Agrostology**Credits 3. 1 Lecture Hour. 6 Lab Hours.**

Classification and identification of grasses based on macro- and micromorphological variations of spikelets; interpretation of spikelet variation and use of diagnostic keys to identify important species of North America including range, forest and other natural resources; a grass collection required.

Prerequisites: Junior or senior classification or approval of instructor. in [BIOL 111](#); junior or senior classification or approval of instructor.

ECCB 313 Diversity and Evolution of Invertebrates

Credits 3. 3 Lecture Hours.

Diversity and Evolution. Survey of invertebrate animal diversity focusing on phylogeny, body patterns, ecology, ethology, zoogeography, anatomy, physiology and adaptations to the environment.

Prerequisites: Grade of C or better in BIOL 111 and 112.

ECCB 314 Down River: Biology of Gulf Coastal Fishes

Credits 3. 2 Lecture Hours. 3 Lab Hours.

Understanding the biological complexity of Gulf coast river systems while gaining hands-on experience in field and museum ichthyological techniques; sampling of the Guadalupe and San Antonio rivers; participation in lectures, museum preparation and archiving specimens at the Biodiversity Research and Teaching Collections (BRTC).

Prerequisites: [ECCB 311](#) with a grade of B or better and approval of instructor.

ECCB 315 Herpetology

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Evolutionary ecology of reptiles and amphibians and conservation biology of the major groups; labs concentrate on the global diversity of herps and the herpetofauna of Texas; foundation for students in wildlife science and biology.

Prerequisites: Grade of C or better in [ECCB 302](#) or [BIOL 318](#), or approval of instructor.

ECCB 316 Field Herpetology

Credit 1. 3 Lab Hours.

Field work involving collection and preservation of herpetological specimens; natural history, ecological relations; available for students enrolled in [ECCB 315](#) who would like to have field trips.

Prerequisites: [ECCB 315](#) or concurrent enrollment.

ECCB 318/RWFM 318 Coupled Social and Ecological Systems

Credits 3. 3 Lecture Hours.

Resilience-based stewardship of social-ecological systems including range, forest and other natural resources; ecological concepts of resilience, sustainability, ecosystem services and vulnerability; investigation of linkages among social and ecological system components; contribution to sustainability and provisioning of ecosystem services; evaluation of multiple knowledge sources as the basis for adaptive ecosystem management.

Prerequisites: [ECCB 205](#), [AGEC 105](#) or equivalent, junior or senior classification or approval of instructor.

Cross Listing: [RWFM 318/ECCB 318](#).

ECCB 319 Principles of Forestry

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Theory and practice of forestry in controlling forest establishment, composition, structure and growth; principles of natural and artificial regeneration; intermediate cultural operations; silvicultural systems; use and control of fire in forests; principles of sustainable stand management.

Prerequisites: [ECCB 309](#) or instructor approval.

ECCB 320 Ecosystem Restoration and Management

Credits 3. 3 Lecture Hours.

A basic conceptual framework for restoration ecology and ecological restoration including range, forest and other natural resources; major principles of ecology related to practical problems confronting humankind, such as, environmental pollution and degradation, exotic species invasions, land use and management trade-offs and consequences; importance of biological diversity.

Prerequisites: [ECCB 205](#), [ECCB 215](#) or equivalent, junior or senior classification or approval of instructor

ECCB 324 Forest Measurements

Credits 2. 4 Lab Hours.

Measures and measurement of the dimensions and attributes of forested areas including the diameters, heights, volume and biomass of trees within a well-defined area; tools used for forest measurement; the conduct of forest inventories; summary measures and reports of inventory results; remote sensing and related technologies that assist forest measurements.

Prerequisites: [RWF 313](#) and [ECCB 319](#) or concurrent enrollment; junior or senior classification.

ECCB 325 Field Studies in Forest Ecosystems

Credits 3. 1 Lecture Hour. 6 Lab Hours.

Field-oriented focus on forest ecosystem science and management; problem-solve management questions through data collection and team-based research; investigate the relationships between landowner objectives, mensuration, silviculture, ecology, soils, and regeneration-focused harvesting systems; foster the development of student-faculty relationships; enhance professional knowledge and skills.

Prerequisites: Junior or senior classification or approval of instructor.

ECCB 351 Geographic Information Systems for Resource Management

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Geographic Information Systems (GIS) approach to solving spatial problems and managing natural resources, including the acquisition, management, manipulation, analysis, and mapping of spatial and non-spatial databases; identification of natural and relevant features from various data sources; integration of relevant technologies and data; extensive use of GIS software to solve real-world problems. Only one of the following will satisfy the requirements for a degree: [AGSM 461](#), [ECCB 351](#), [ECCB 651](#), [BAEN 651](#), or [REN 651](#).

Prerequisites: Junior or senior classification or approval of instructor.

Cross Listing: [AGSM 461](#) and [RWF 351](#).

ECCB 400 Molecular Ecology

Credits 3. 3 Lecture Hours.

Fundamentals of molecular ecology applied to conservation and management of wildlife and fisheries; presentation and discussion of scientific papers on wildlife and fisheries molecular ecology; topics in conservation, management and aquaculture.

Prerequisites: Grade of a C or better in [BIOL 112](#) or equivalent; junior or senior classification.

ECCB 401 General Mammalogy

Credits 3. 2 Lecture Hours. 3 Lab Hours.

Mammalian biology; evolution, classification, biogeography, reproduction, physiology, ecology, and behavior; focuses on basic concepts necessary for a foundation in both wildlife science and biology.

Prerequisites: Grade of C or better in [ECCB 302](#) or [BIOL 318](#); junior classification.

ECCB 402 General Ornithology

Credits 3. 2 Lecture Hours. 3 Lab Hours.

Introduction to study of birds, their structure, classification, geographic distribution, ecological relations and economic status; foundation of wildlife science, also for museum work.

Prerequisites: Grade of C or better in [ECCB 302](#) or [BIOL 318](#); junior classification.

ECCB 403 Population and Community Ecology

Credits 3. 2 Lecture Hours. 3 Lab Hours.

Concepts of animal ecology which emerge at various levels of organization; the ecosystem, the community, the population and the individual; laboratories emphasis on the quantitative analysis of field data and the simulation of population dynamics.

Prerequisites: Grade of C or better in RENR 205 or approval of instructor; junior classification.

ECCB 405 Forest Resource Assessment and Management**Credits 3. 1 Lecture Hour. 4 Lab Hours.**

Integration of biophysical, economic and social factors in forest resource analysis, management planning and decision making; applications of interdisciplinary knowledge and multiple-use principles to practical forest management problems.

Prerequisites: Senior classification or approval of instructor.

ECCB 406/GEOG 462 Advanced GIS Analysis for Natural Resources Management**Credits 3. 2 Lecture Hours. 2 Lab Hours.**

Advanced topics in geographic information systems (GIS) to solve natural resource problems; manipulation of raster data types; three-dimensional modeling; emphasis on geoprocessing as it relates to applied projects particularly with habitat suitability models; field and lab use of global positioning systems (GPS); internet-based GIS modeling.

Prerequisites: [ECCB 351](#), [RWFM 351](#), or [AGSM 461](#), or equivalent, or approval of instructor; junior or senior classification.

Cross Listing: [GEOG 462/ECCB 406](#).

ECCB 407 Programming for Spatial Data Applications**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Programming for spatial data applications in general and for natural resources application in particular; basic programming concepts and constructs for the creation and manipulation of spatial data; automating of processes; programming behind spreadsheet and GIS applications.

Prerequisites: [ECCB 351](#) or equivalent, junior or senior classification or approval of instructor.

ECCB 408 Arboriculture**Credits 3. 2 Lecture Hours. 2 Lab Hours.**

Tree selection and planting to fit climatic, space and edaphic conditions; diagnosing tree abnormalities and practicing intensive tree care. Frequent field work and demonstrations.

Prerequisite: Senior classification or approval of instructor.

ECCB 415/MARB 415 Coastal Marine Biology and Geology of Alaska**Credits 3. 3 Lecture Hours. 2 Lab Hours.**

Field course conducted in south-central Alaska for two weeks; work at the remote Alice Cove Research Station located in Prince William Sound; conduct research on marine mammals behavior and ecology; exploration of the geology and glaciology.

Prerequisite: [BIOL 112](#).

Cross Listing: [MARB 415/ECCB 415](#).

ECCB 416 Fire Ecology and Natural Resource Management**Credits 3. 3 Lecture Hours.**

Behavior and use of fire in the management of natural resources including range, forest and other natural resources; principles underlying the role of weather, fuel characteristics and physical features of the environment related to the development and implementation of fire management plans.

Prerequisites: [ECCB 205](#) or equivalent, junior or senior classification or approval of instructor.

ECCB 417 Prescribed Fire**Credits 4. 2 Lecture Hours. 5 Lab Hours.**

Use of prescribed fire to achieve ecosystem management objectives; understanding of how to plan and implement prescribed fires; coursework on fire behavior, fuel properties and the social aspects of prescribed fire and wildfire; how to safely use fire to achieve multiple outcomes including biodiversity conservation, reduced hazardous fire risk, livestock production and timber management.

Prerequisites: Junior or senior classification or approval of instructor.

ECCB 420 Ecological Restoration of Wetland and Riparian Systems

Credits 3. 2 Lecture Hours. 2 Lab Hours.

How wetland and riparian areas link terrestrial and aquatic systems and function hydrologically and ecologically within watersheds; integrated approaches for restoration of degraded wetland and riparian systems; improving water resources through vegetation management with a special interest in rangelands.

Prerequisites: [ECCB 205](#), junior or senior classification or approval of instructor.

ECCB 422 Behavioral Ecology

Credits 3. 3 Lecture Hours.

Survey of the control, ontogeny, function and natural selection of behavior in a variety of vertebrate and invertebrate species; interaction between the organism and its environment with regard to the mechanisms and adaptive significance of behavior; evolution of anti-predator, feeding, reproductive and cooperative traits.

Prerequisites: Grade of C or better in [BIOL 112](#) or equivalent.

ECCB 430 Advanced Restoration Ecology

Credits 3. 3 Lecture Hours.

A dynamic discipline relying heavily on the fundamentals of ecology; practice translating and communicating key ecological concepts to advanced case studies in ecological restoration; enhance skills for professional applications.

Prerequisites: [ECCB 205](#), [ECCB 320](#), and [ECCB 420](#); or approval of instructor.

ECCB 444 Remote Sensing of the Environment

Credits 3. 2 Lecture Hours. 3 Lab Hours.

Principles and techniques necessary for applying remote sensing to diverse issues in studying and mapping land uses and land covers of the terrestrial environment; emphasizes a hands-on learning approach with theoretical foundations and applications in both aerial and satellite remote sensing, using optical and lidar datasets.

Prerequisites: Junior or senior classification or approval of instructor.

ECCB 446 Drones for Environmental Remote Sensing

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Fundamental components of small unmanned aerial systems (sUAS), sensors and platforms, UAS operational concepts, the principles of UAS data collection, legal framework within which UAS should be operated and applied, data processing software and the generation of orthomosaics and 3D point clouds; emphasis on the use of UAS in a broad spatial sciences, technology and applications context, including vegetated ecosystems.

Prerequisites: [ECCB 444](#); junior or senior classification.

ECCB 448 Fish Ecophysiology

Credits 3. 3 Lecture Hours.

Ecological domains and demands placed on physiological performance; physiological mechanisms and control in fishes, interaction of physiological mechanisms with environment, emphasis in adaptive value of physiological traits; analysis of physiology and adaptation with models; process and functional modeling.

Prerequisite: Junior or senior classification or approval of instructor.

ECCB 450/ENTO 450 Caribbean Conservation

Credits 2. 6 Lab Hours.

Provide experience in and appreciation for diverse tropical habitats and the problems associated with conserving these habitats; design and conduct individual research projects on topics of their choice with approval from the instructors on project design and feasibility.

Prerequisites: Concurrent enrollment in [ENTO 300/ECCB 300](#) and [ENTO 451/ECCB 451](#); junior or senior classification.

Cross Listing: [ENTO 450/ECCB 450](#).

ECCB 451/ENTO 451 Caribbean Research Seminar**Credit 1. 1 Other Hour.**

Document research activities; keep a journal of activities and research methods during study abroad trips.

Prerequisites: Concurrent enrollment in [ENTO 300/ECCB 300](#) and [ENTO 450/ECCB 450](#); junior or senior classification.

Cross Listing: [ENTO 451/ECCB 451](#).

ECCB 454 Amazon Field School**Credits 4. 4 Lecture Hours.**

Investigation of social and ecological complexities of biodiversity conservation in tropical ecosystems; biological and social science approaches to evaluate causes, consequences and solutions to biodiversity loss through ecology, culture and governance.

Prerequisites: Junior or senior classification with a minimum GPA of 2.0 and approval of instructor.

ECCB 460/RPTS 460 Nature, Values, and Protected Areas**Credits 3. 3 Lecture Hours.**

Writing-intensive discussion of the ways in which protected areas reflect human values about nature; identify stakeholders in and around protected areas, exploring how interests either conflict or coincide; evaluate social, economic, cultural, and ecological trade-offs of different approaches to conservation.

Prerequisites: Junior or senior classification or approval of instructor.

Cross Listing: [RPTS 460/ECCB 460](#).

ECCB 462 Amazon River Tropical Biology**Credits 3. 3 Lecture Hours.**

History, ecology, evolutionary-biology, geography and culture of the Amazon River and Rio Negro; exploration of the world's most bio-diverse river during a 10-day expedition from Manaus, Brazil; survey biota, record observations about the ecosystem, select research topics, development of presentations.

Prerequisites: [BIOL 107](#), [BIOL 112](#), [BIOL 113](#), [BIOL 357](#) or RENR 205; or approval of instructor.

ECCB 481 Seminar**Credit 1. 1 Other Hour.**

Oral discussion of selected topics from technical literature on recent advances in the field.

Prerequisites: Senior classification in wildlife and fisheries sciences; 6 hours of 300- or 400-level wildlife and fisheries sciences courses. May be repeated for credit.

ECCB 484 Internship**Credits 0 to 4. 0 to 4 Other Hours.**

Supervised experience program conducted in the student's area of specialization.

Prerequisites: Approval of student's advisor.

ECCB 485 Directed Studies**Credits 0 to 3. 0 to 3 Other Hours.****ECCB 489 Special Topics in...****Credits 1 to 4. 1 to 4 Other Hours.**

Selected topics in an identified area of rangeland ecology and management. May be repeated for credit.

Prerequisites: Approval of instructor.

ECCB 491 Research**Credits 0 to 4. 0 to 4 Other Hours.**

Research conducted under the direction of faculty member in ecosystem science and management. May be repeated for credit.

Prerequisites: Junior or senior classification and approval of instructor.

Rangeland, Wildlife, & Fisheries Management

RWFM 101 Exploring Rangeland, Wildlife and Fisheries Management

Credit 1. 1 Lecture Hour.

Exploration of knowledge, skills and abilities required for varied careers within rangeland, wildlife and fisheries management; development of a professional portfolio and résumé; exploration of career options through team approach; conduct one service project.

RWFM 102 Introduction to Natural Resources and Ecosystem Management

Credit 1. 1 Lecture Hour.

Introduction to natural resources including range and forest and ecosystem system approach to wildland management; survey of the field of natural resources and related industries.

RWFM 202 Concepts in Applied Plant Biology

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Overview of diversity in form and function present in the plant kingdom with linkage to the human condition; emphasis on the full spectrum of plant groups ranging from the lower plants to the highly advanced seed plants; selected families and genera considered in detail regarding important ecological and anthropogenic values; exploration of the structural, reproductive and ecological attributes from the cellular level to the whole organism; basic concepts of botanical classification and nomenclature.

RWFM 291 Research

Credits 1 to 4. 1 to 4 Other Hours.

Research conducted under the direction of faculty member in wildlife and fisheries sciences. May be repeated 3 times for credit.

Prerequisites: Freshman or sophomore classification and approval of instructor.

RWFM 301 Wildland Watershed Management

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Elements of watershed management including range, forest and other natural resources and principles and practices of wildland management for protection, maintenance and improvement of water resource values.

Prerequisite: Junior or senior classification or approval of instructor.

RWFM 302 Wildland Plants of North America

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Familiarization with the distribution and economic value of important wildland plants including range, forest and other natural resources in Texas and North America and fundamentals of sight identification of these plants; plant collection required.

Prerequisite: Junior or senior classification or approval of instructor.

RWFM 305 Principles and Practices of Wildlife and Fisheries Management

Credits 3. 3 Lecture Hours.

A broad survey of the diverse fields of wildlife, fisheries, and aquaculture management; exploration of professions for students interested in pursuing related careers; overview of the history and philosophical underpinnings of modern wildlife and fisheries management; emphasis on key subfields of each field that are translatable into post-graduate careers.

RWFM 306 Wildlife and the Changing Environment

Credits 3. 3 Lecture Hours.

Using an ecosystem approach, analyzes changes in the North American environment; effects of these changes on wildlife populations; and reviews areas of major, current concern.

Prerequisites: Junior or senior classification; restricted to non-majors.

RWFM 308 Fish and Wildlife Laws and Administration

Credits 3. 3 Lecture Hours.

Review and analysis of state and federal laws and international treaties and conventions affecting fish and wildlife; their application and administration; organizational structure of state, federal and international agencies; their objectives, policies and practices. **Prerequisites:** Grade of C or better in [ECCB 205](#) or [BIOL 357](#); junior classification or approval of instructor.

RWFM 309/VTPB 301 Wildlife Diseases

Credits 3. 3 Lecture Hours.

Basic mechanisms of diseases as they occur in wildlife populations; interplay of habitat requirements, individual physiological requirements and disease producing mechanisms of varied wildlife species.

Prerequisite: Junior classification or approval of department head.

Cross Listing: [VTPB 301/RWFM 309](#).

RWFM 313 Vegetation Sampling Methods and Designs in Ecosystems

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Basis for vegetation sampling in ecosystems including range, forest and other natural resources; methods for conducting sampling; selection of sampling unit appropriate for vegetation type; sampling statistics; mean comparisons; regression analysis; sampling design principles; development of sampling plan; presentation and interpretation of sampling data.

Prerequisites: Any MATH course satisfying university core curriculum, junior or senior classification or approval of instructor.

RWFM 314 Principles of Rangeland Management Around the World

Credits 3. 3 Lecture Hours.

Basic knowledge of world rangeland ecosystems, how these systems are managed in diverse cultural settings; principles of underlying ecological processes influenced by various land management practices; foster understanding of the values that people in different countries place on rangeland resources; use of these values to enhance geologically sustainable and socially acceptable rangeland management practices.

Prerequisite: Junior or senior classification or approval of instructor.

RWFM 315 Rangeland Inventory and Monitoring

Credit 1. 2 Lab Hours.

Theory and methods to inventory rangeland vegetation; sampling design; analysis of inventory data; interpretation of sampling data; preparation of a technical report; presentation of inventory data in text, tables, and graphs using the style of the Rangeland Ecology and Management discipline.

Prerequisites: [RWFM 313](#), junior or senior classification or approval of instructor.

RWFM 316 Range Ecology

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Organization and distribution of rangeland ecosystems of the world, with emphasis on North America; community dynamics and functions stressed including biotic history, succession, disturbance regimes, competitive interactions, herbivory, energy flow and nutrient cycling; conservation of rangeland resources.

Prerequisites: [ECCB 205](#), [ECCB 215](#), [RWFM 302](#), and [RWFM 314](#), junior or senior classification or approval of instructor.

RWFM 317 Vegetation Management

Credits 3. 3 Lecture Hours.

Familiarization with practices that cause changes in rangeland vegetation composition for multiple uses; understanding of criteria for range improvement practices; comparison of expected responses of livestock forage production, watershed parameters and wildlife to vegetation changes following range improvements; systems concept for planning, analysis and implementation of range improvement practices.

Prerequisites: [RWFM 314](#), junior or senior classification or approval of instructor.

RWFM 318/ECCB 318 Coupled Social and Ecological Systems

Credits 3. 3 Lecture Hours.

Resilience-based stewardship of social-ecological systems including range, forest and other natural resources; ecological concepts of resilience, sustainability, ecosystem services and vulnerability; investigation of linkages among social and ecological system components; contribution to sustainability and provisioning of ecosystem services; evaluation of multiple knowledge sources as the basis for adaptive ecosystem management.

Prerequisites: [ECCB 205](#), [AGEC 105](#) or equivalent, junior or senior classification or approval of instructor.

Cross Listing: [ECCB 318/RWFM 318](#).

RWFM 321 Communicating Natural Resources

Credits 3. 3 Lecture Hours.

Principles of effectively communicating natural resource science to a diverse stakeholder group; development of critical skills for obtaining and retaining employment in the Rangeland, Wildlife, and Fisheries Management fields; experience in audience identification, mixed-media presentations and interpersonal communications skills unique to the culture of diverse natural resources stakeholders.

Prerequisite: RWFM major.

RWFM 322 Community Development and Sustainability

Credits 3. 3 Lecture Hours.

Analysis of the elements comprising a community, community assessment techniques and community development processes engaged by stakeholders and residents to improve living conditions; definitions and principles associated with community development.

Prerequisites: Junior or senior classification, or approval of instructor.

RWFM 323 Parks and Protected Area Management

Credits 3. 3 Lecture Hours.

Focus on key aspects of parks and protected area management; significance of parks and protected areas in society; visitor use; systems and techniques for management; agencies and organizations involved, and factors that influence parks and protected area management.

Prerequisites: Junior or senior classification, or approval of instructor.

RWFM 325 Watershed Analysis and Planning

Credits 3. 3 Lecture Hours.

Provide an integrated framework for watershed planning that addresses the related biophysical, social and economic issues; comprehensive in scope and approach giving students the tools and techniques for developing sound watershed management policy and practice; water issues, problems and regulations for Texas.

Prerequisite: Junior or senior classification.

RWFM 333 Rangeland, Wildlife & Fisheries Field Techniques

Credits 3. 3 Lecture Hours.

Rangeland, Wildlife & Fisheries Field Techniques. Techniques of natural resource principles in rangeland, wildlife and fisheries management within a field practicum setting; analyze and assess management scenarios through critical thinking exercises, field measurements, conservation planning, and integration of social, legal and regulatory, and economic factors and constraints.

RWFM 345 Human Dimensions of Natural Resource Management and Policy

Credits 3. 3 Lecture Hours.

Social science principles that can help identify and address problems in natural resource and environmental management with two goals; exploration of concepts that help explain why people affect the environment as they do; introduction to methods for influencing and understanding human behavior that can be used to promote community and environmental sustainability.

Prerequisite: Junior or senior classification.

RWFM 349 Rangeland and Wildlife Animal Nutrition

Credits 3. 3 Lecture Hours.

Connection of the life history of wild and domestic animals with the quality of their habitat by examining the transfer of energy and nutrients from foods to body tissues and activities for survival, growth and reproduction; exploration of the use of nutrition for management and conservation of rangelands and wildlands.

Prerequisite: Junior or senior classification; [ECCB 205](#) or [BIOL 357](#); [ANSC 107](#) and [ANSC 108](#) or [BIOL 107](#).

RWFM 350 Wildlife Population Dynamics**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Development of a background in population dynamics of wildlife species, and basic estimation of those parameters; theoretical components, how populations are measured, underlying heuristic theories of population dynamics, and methods for assessing wildlife population dynamics and estimating population size.

Prerequisite: [STAT 302](#), [MATH 147](#), [MATH 150](#), and [ECCB 205](#).

RWFM 351 Geographic Information Systems for Resource Management**Credits 3. 2 Lecture Hours. 2 Lab Hours.**

Geographic Information Systems (GIS) approach to solving spatial problems and managing natural resources, including the acquisition, management, manipulation, analysis, and mapping of spatial and non-spatial databases; identification of natural and relevant features from various data sources; integration of relevant technologies and data; extensive use of GIS software to solve real-world problems. Only one of the following will satisfy the requirements for a degree: [AGSM 461](#), [ECCB 351](#), [ECCB 651](#), [BAEN 651](#), or [RENR 651](#).

Prerequisites: Junior or senior classification or approval of instructor.

Cross Listing: [AGSM 461](#) and [ECCB 351](#).

RWFM 354 Wildlife Anatomy and Physiology**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Fundamental knowledge of the anatomy and physiology of wild animals; comparative form and function of all major vertebrate systems; familiarity with anatomical or physiological characteristics of various groups limit or allow their exploitation of different habitat types; examination and recognition of interactions between animals and their environment.

Prerequisite: RWFM majors; [BIOL 111](#) and [BIOL 112](#) .

RWFM 370 Aquatic Vegetation Management**Credits 2. 2 Lecture Hours.**

Identification and management of common and problematic aquatic vegetation species; aquatic plant ecology and management of aquatic vegetation as aquatic animal habitat; management methods include physical, chemical and biological methods as well as propagation and introduction and restoration.

Prerequisite: Junior or senior classification.

RWFM 371 Pond and Small Impoundment Management**Credits 3. 3 Lecture Hours.**

Practices and principles with a focus on the variations in regional management techniques in North America, from north to south; history of pond management, the pond environment, stocking strategies for recreational small impoundments, fisheries management in small bodies of water, water quality management, problem troubleshooting in small impoundments and management opportunities.

Prerequisite: Junior or senior classification, or approval of instructor.

RWFM 375 Conservation of Natural Resources**Credits 3. 3 Lecture Hours.**

Principles and philosophies associated with the development, management and use of natural resources; ecological and social implications inherent in management alternatives involving the natural environment and use of renewable natural resources.

RWFM 400 Study Abroad in Natural Resources**Credits 2 to 12. 2 to 12 Lecture Hours.**

Provides students with an opportunity to gain first-hand experience in natural resource management in foreign countries; focus on the interaction of public, communal and private land tenure systems with the ecological and human dimensions of rangeland management, wildlife conservation and nature-based tourism. May be taken two times for credit.

Prerequisite: Junior or senior classification.

RWFM 401 Rangeland Plant and Herbivory Dynamics**Credits 3. 3 Lecture Hours.**

Evaluation of the effects of herbivory at the plant population and community levels; developmental plant morphology and plant resistance to grazing; foraging strategies of herbivores relating to landscape and plant attributes along with animal nutritional needs; manipulation of the grazing process to meet management objectives; focus on resilience, adaptive management and alternative goods and services along with grazing topics.

Prerequisite: ESSM 314.

RWFM 404 Aquatic Ecosystems**Credits 3. 3 Lecture Hours.**

Inland and coastal zone aquatic ecosystems, lower foodweb 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 foodwebs, recruitment of commercially and recreationally important fisheries.

Prerequisite: Junior or senior classification or approval of instructor.

RWFM 405 Urban Wildlife and Fisheries**Credits 3. 3 Lecture Hours.**

Urban wildlife and fisheries trains students to establish and maintain diverse, self-sustaining urban wildlife and fish populations at levels in harmony with ecological, social, and economic values of the human community and to develop optimal levels of public appreciation and use of urban wildlife and fish resources and associated habitats.

Prerequisites: [ECCB 205](#); junior or senior classification.

RWFM 406 Wildlife Habitat Management**Credits 3. 3 Lecture Hours.**

Designed to acquaint the student with major land use practices on lands that produce wildlife, how these influence wildlife production and alterations or manipulations of habitat used to achieve specific wildlife management goals.

Prerequisites: Grade of C or better in [ECCB 205](#) and [ECCB 302](#) or approval of instructor; junior classification.

RWFM 407 Field Wildlife Habitat Management**Credit 1. 2 Lab Hours.**

Field and laboratory studies of specific wildlife habitat management practices with special emphasis on those used in Texas; attendance required at four weekend field trips to study wildlife habitat operations.

Prerequisite: Concurrent enrollment in [RWFM 406](#).

RWFM 408 Techniques of Wildlife Management**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Techniques available to directly and indirectly manipulate wild animal populations to achieve balance between socioeconomic and aesthetic values.

Prerequisites: Senior classification or approval of instructor.

RWFM 409 NATURE in the Classroom: Needed Activities To Understand Resource Ecology**Credit 1. 3 Lab Hours.**

Integration of natural resources through conservation ecology programs, utilization of research techniques adaptable for classroom use; field trips to community facilities, gaming strategies and computer simulations.

Prerequisites: [RWFM 420](#) or [ECCB 205](#) or concurrent enrollment; junior or senior classification.

RWFM 410 Principles of Fisheries Management**Credits 4. 3 Lecture Hours. 3 Lab Hours.**

Basic knowledge from ichthyology, biology of fishes and limnology related to applied aspects of freshwater and marine fishery science. Management techniques applicable to streams, ponds, reservoirs, estuaries and the oceans.

Prerequisites: BIOL 357, or grade of C or better in ECCB 311, ECCB 403, or RWFM 404, or approval of instructor.

RWFM 411 Ecosystem Management**Credits 4. 3 Lecture Hours. 3 Lab Hours.**

Concepts and practices relevant to the development of landscape/regional level ecosystem management plans including range, forest and other natural resources; an ecosystem management plan will be developed utilizing a strategic management/coordinated resources approach to establish resource goals, ecosystem resource analysis and impact evaluation and implementation compatible with societal and individual concerns.

Prerequisites: ECCB 205, senior classification or approval of instructor.

RWFM 413 Problem Solving in Wildlife and Fisheries**Credits 4. 2 Lecture Hours. 4 Lab Hours.**

Project-based to combine experiences and knowledge from other wildlife and fisheries sciences courses; critical thinking about issues and relevant questions in wildlife and fisheries sciences field; emphasis on completion of course project and answering research or management question.

Prerequisites: Grade of a C or better in RWFM 317 and ECCB 304; STAT 301, STAT 302, or STAT 303; senior classification.

RWFM 414 Ecology of Lakes and Rivers**Credits 4. 3 Lecture Hours. 3 Lab Hours.**

Biological, physical, chemical and geological characteristics of fresh waters; human impacts, which include influence of industrial, domestic, conservation and restoration activities.

Prerequisites: CHEM 101 and CHEM 222; PHYS 201; junior or senior classification.

RWFM 415 Range Analysis and Management Planning**Credits 4. 3 Lecture Hours. 2 Lab Hours.**

Basic concepts and theories of range management systems. Resource inventory, analysis and management planning.

Prerequisites: AGECE 105 or ECON 202, RWFM 314, RWFM 317; junior or senior classification or approval of instructor.

RWFM 417 Biology of Fishes**Credits 4. 3 Lecture Hours. 3 Lab Hours.**

Fishes' physiological and morphological adaptations for life in aquatic systems; physiological and behavioral responses of fish to environmental variation. Laboratory emphasizes design, conduct and analysis of virtual experiments featuring "EcoFish," a simulation model of fish autecology.

Prerequisites: ECCB 302 or ECCB 311; RWFM 414; or approval of instructor.

RWFM 418 Ecology of the Coastal Zone**Credits 3. 3 Lecture Hours.**

Introduction to the ecosystems that comprise the coastal zone with an emphasis on the role of freshwater inflows; open bay systems are the focus of lectures, but fringing habitats are also discussed; human components of the coastal zone are also discussed including industrial, commercial domestic, conservation and restoration issues.

Prerequisite: Junior or senior classification.

RWFM 419 Wildlife Restoration**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Study of the fundamentals of the restoration of animal populations and the resources they require; factors that control the distribution and abundances of animals in relation to restoration; and how restoration plans for wildlife are developed.

Prerequisite: [ECCB 205](#) or equivalent; junior or senior classification or approval of instructor; [RWFM 406](#) and [RWFM 407](#) and [ECCB 320](#) preferred.

RWFM 420 Ecology and Society**Credits 3. 3 Lecture Hours.**

Study and compare human and natural ecosystems using diversity, interrelations, cycles, and energy as the conceptual organization; central themes are sustainability, stewardship and science.

Prerequisite: Junior or senior classification.

RWFM 421 Upland Bird Management**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Basic morphological, physiological and nutritional characteristics important to upland bird management, both game and non-game; history of upland bird habitat and management in the U.S., as well as current status of various groups of species; emphasis on population and habitat management techniques relevant to specific species; application of management principles to current, real-world management problems.

Prerequisite: RWFM majors; WFSC 402 and [RWFM 350](#).

RWFM 422 Large Mammal Management**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Management of various herbivorous large mammals, both game and non-game; development of knowledge on how to implement habitat and population management techniques to achieve management goals; history of modern wildlife management as it relates to the restoration and harvest of various species as game that once were imperiled; utilization of natural history information in the selection of the most the beneficial management techniques, and a survey of the techniques currently used in large mammal population management.

Prerequisite: RWFM majors; WFSC 401 and [RWFM 350](#).

RWFM 423 Waterfowl and Wetland Management**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Management of waterfowl as a natural resource as well as their importance in maintaining the health of the freshwater ecosystems; integral management of wetland ecosystems that support migrating and resident waterfowl, water birds, wading birds and other species; development of Multi-trophic knowledge of the management of wetlands, from alligators to avocets, for systems critical to the health of Texas' coastal region, as well as their value to human health and safety statewide; interdisciplinary approach, including other birds, mammals, herpetofauna, fish and invertebrates.

Prerequisite: RWFM majors; WFSC 402 and [RWFM 350](#).

RWFM 424 Wildlife Damage Management**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Exploration of the principles, philosophy, techniques, and application of wildlife damage management to solve negativistic human-wildlife interactions; exposure to animal capture, handling and sampling as well as human dimensions of wildlife damage management; hands-on project throughout the semester in real-world wildlife damage management situations; focus on preparation to pursue employment as a wildlife damage manager with public or private employers.

Prerequisite: RWFM majors; WFSC 401 and [RWFM 350](#).

RWFM 425 Carnivore Management**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Principles and practices of carnivore management; biology, ecology and management of various carnivorous wildlife species; application of the principles of trophic levels, carrying capacity and wildlife restoration to inform management plans; emphasis on current carnivore management scenarios that encompass both the biology and human-dimensions of carnivores; real-life examples to contextualize course learning.

Prerequisite: RWFM majors; WFSC 401 and [RWFM 350](#).

RWFM 427 Disease Management in Fisheries and Aquaculture**Credits 3. 2 Lecture Hours. 2 Lab Hours.**

Fish and invertebrates of economic importance; factors influencing the maintenance of health for each species group; problems and solutions unique to each phase of aquaculture from breeding to growout; application of routine diagnosis and other management tools.

Prerequisite: Junior classification.

RWFM 428 Wetland Ecosystem Management**Credits 4. 3 Lecture Hours. 3 Lab Hours.**

Ecosystem approach to the ecology and management of wetlands; emphasis on factors controlling wetland structure and function, characteristics of different wetland types, and applied issues of wetland restoration, creation and delineation.

Prerequisite: Junior or senior classification.

RWFM 434 Changing Natural Resource Policy**Credits 3. 3 Lecture Hours.**

Process through which environmental policies are changed; study theories of social and political change; teams use theories with their original research on environmental policy problems to create and implement plans for changing environmental policies in their own communities.

Prerequisite: Junior or senior classification or approval of instructor.

RWFM 436 Natural Resources Policy**Credits 3. 3 Lecture Hours.**

Natural resources and forest policy development in the United States and review of current issues in forest and related natural resource policy.

Prerequisite: Junior or senior classification or approval of instructor.

RWFM 440 Wetland Delineation**Credits 3. 2 Lecture Hours. 2 Lab Hours.**

Covers the application of the 1987 Wetland Delineation Manual in use by the Army Corps of Engineers (CORPS); field indicators of hydrophytic vegetation; hydric soils, wetland hydrology, methods for making jurisdictional determinations in non-disturbed and disturbed areas, recognition of problem wetlands and technical guidelines for wetlands.

Prerequisite: Junior or senior classification.

RWFM 443 Aquaculture I: Principles and Practices**Credits 3. 2 Lecture Hours. 2 Lab Hours.**

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.

RWFM 444 Aquaculture Hatchery Management**Credits 3. 3 Lecture Hours.**

Study of finfish and shellfish hatchery requirements and operations, broodstock management, reproduction and hatchery techniques and application of those techniques in the field; management of hatchery systems for the production of seed stock.

Prerequisite: Junior or senior classification or approval of instructor.

RWFM 445 Fish Health and Diseases**Credits 3. 3 Lecture Hours.**

Health disorders and diseases of finfish and shellfish including water quality issues and management, environmental endocrine disruptors, biosecurity and practical techniques used to isolate, identify and manage or mitigate diseases.

Prerequisite: Junior or senior classification.**RWFM 446 Fish Physiology****Credits 3. 3 Lecture Hours.**

Physiology of fish focusing on the diverse range of functional adaptations that fish use to cope with various environmental and physiological states; bioenergetics, respiration, cardiovascular system, blood chemistry and function, muscle function and locomotion, gas exchange, buoyancy regulation, nitrogen metabolism and excretion, thermoregulation, reproduction, growth, osmoregulation, and immunity.

Prerequisite: Junior or senior classification; WFSC 311.**RWFM 447 Aquaculture II: Aquatic Animal Nutrition, Feeding and Disease Management****Credits 3. 2 Lecture Hours. 2 Lab Hours.**

(3-0). Review of scientific perspectives on major aspects of nutrition, diet formulation and feeding of aquatic species in aquaculture; major disease-causing organisms encountered in aquaculture and means of disease prevention and control.

Prerequisite: Junior or senior classification.**RWFM 449 Professional Aspects of Aquatic Ecology****Credits 3. 3 Lecture Hours.**

Discipline of aquatic sciences through oral presentation and written documentation; job market expectations, resume preparation, job application, and preparation for and giving an interview.

Prerequisite: Junior or senior classification or approval of instructor.**RWFM 461 Community-Based Conservation****Credits 3. 3 Lecture Hours.**

Study of community-based conservation (CBC); definition, description, discussion, and analysis of the history, principles, critical actors, benefits, factors leading to successful initiatives, challenges in implementation and different models of community-based conservation.

Prerequisite: Junior or senior classification.**RWFM 470 Environmental Impact Assessment****Credits 3. 3 Lecture Hours.**

The evolution of natural resources regulatory policies and how this influences current procedures for environmental/natural resources assessment and management; demonstration of the environmental impact assessment procedures and policy issues associated with environmental impacts.

Prerequisite: Senior classification or approval of instructor.**RWFM 480 Plant Identification and Undergraduate Range Management Exam Team Competitions****Credits 0 to 3. 0 to 3 Other Hours.**

Knowledge of plants morphology, identification and distribution for the profession of range management; knowledge of range management across the world; weekly tests to train on plant and range management knowledge. May be repeated for credit.

Prerequisites: Junior or senior classification or approval of instructor.**RWFM 481 Senior Seminar****Credit 1. 1 Lecture Hour.**

Completion of professional e-portfolio, résumé and job application; exploration of job search, application, and interview; discipline competency exams; program evaluation.

Prerequisites: Senior classification in ESSM or RWFM degree programs.

RWFM 484 Internship**Credits 0 to 9. 0 to 9 Other Hours.**

Practical experience working in a professional wildlife or fisheries facility.

Prerequisite: Approval of department head.**RWFM 485 Directed Studies****Credits 1 to 3. 1 to 3 Other Hours.**

Individual study and research on selected problem approved by instructor and academic advisor.

Prerequisites: Junior or senior classification; approval of department head.**RWFM 489 Special Topics in...****Credits 1 to 4. 1 to 4 Other Hours.**

Selected topics in an identified area of wildlife and fisheries sciences. May be repeated for credit.

Prerequisite: Approval of department head.**RWFM 491 Research****Credits 0 to 6. 0 to 6 Other Hours.**

Laboratory and/or field research supervised by a faculty member in wildlife and fisheries sciences. Registration in multiple sections of this course are possible within a given semester provided the per semester credit hour limit is not exceeded.

Prerequisites: Junior or senior classification; approval of instructor.

Internship Requirements

Not all ECCB degrees require an Internship, but students are always encouraged to participate in a career related internship.

Professional Internship: Independent study and supervised field experience related to a professional area of interest dependent on your major.

To be enrolled in ECCB 484, please complete the form at https://tamuag.az1.qualtrics.com/jfe/form/SV_6PTcDB9rtsKYI05 . Once you complete the form, your internship supervisor will be emailed a similar internship verification form requesting information such as dates, hours, and required duties. Once we receive a response from the internship supervisor, we will review the internship information and enroll you in ESSM 484 for the appropriate credit hour(s). You will be emailed with additional information once you are enrolled or if there are issues with the internship application.

Please keep in mind 45 hours is equal to 1 credit hour and 3 credit hours (a total of 135 hours) is required for internship credit.

Internships will not be approved if they do not pertain to the ECCB major. To receive 3 credit hours for a professional internship, students must complete 136 hours of work experience relating to the ECCBmajor (e.g., renewable natural resources, ecosystem management/policy, multi-use land management, environmental assessment, resource inventory, natural resource planning, law, policy analysis, land remediation, etc.).

The internship must be approved by the ECCB Undergraduate Programs Office prior the internship start date to receive course credit. Completed and signed internship applications from both the student and the internship supervisor must be submitted by the following deadlines:

- July 1 - Fall enrollment
- December 1 - Spring enrollment
- April 1 - Summer enrollment

Agricultural and Natural Resources Policy and Internship Program

The Agricultural and Natural Resources Policy (ANRP) Internship Program is one of the premier leadership opportunities in the College of Agriculture and Life Sciences at Texas A&M University. Through this program, students complete exciting, policy-focused internships in Washington, D.C., Austin, Texas, and Rome, Italy for a semester while earning academic credit. ANRP offers many benefits from paid internships and academic credit to getting connected with the Aggie network! Most of all, an ANRP internship will give you a chance to try out a potential career risk free! This is your chance to gain real work experience that many employers are looking for today. So let ANRP be the experience that opens doors to your future! To learn more about all that the ANRP Internship Program has to offer, visit <http://anrp.tamu.edu/home/internships/benefits/>.

International Programs

The following international programs have been developed by the College of Agriculture and Life Sciences or offer study, internship, research, and service-learning opportunities for students in the college. Before you begin your program search, talk with your academic advisor to identify the best type of international opportunity for your degree.

Program Types:

- **Faculty-led** – Short-term programs led by COALS faculty members and offer TAMU courses. Most programs are open to all majors, check eligibility requirements.
- **Exchange** – Semester or academic year opportunities with COALS and TAMU international partner universities. These programs offer transfer credit academic coursework for students in COALS.
- **Field Trips** – Short-term trips that enhance an on-campus course.
- **Internships** – Summer and semester opportunities to gain work experience in international agriculture businesses, organizations, and agencies.
- **Virtual** – Collaborative study or intern programs that actively connect students with international peers, organizations, or companies through online platforms.



Departmental Study Abroad Opportunities

A&M Caribbean Tropical & Field Biology — Study Abroad Program in Trinidad & Tobago, West Indies

Students conduct field research and complete class projects in Trinidad and Tobago. Individual and group research projects include, but are by no means restricted to, forensic entomology, host-parasite studies, basic ecology, and general biodiversity surveys. Students design projects, collect data, analyze results, and prepare a professional research article. Throughout the program students will be going on numerous hikes, some of which can be challenging, but the hikes allow the students to see and experience the islands' diverse tropical flora and fauna. Students will also spend a good amount of time in and on the water conducting research and participating in program organized activities like snorkeling.

Highlights

- Gain hands-on experience designing and implementing an independent research project in a biodiverse area of the Caribbean.
- Experience the diverse Caribbean flora and fauna through rainforest hikes, mangrove cruises, and snorkeling on coral reefs.
- Witness female sea turtles nesting and/or hatchling sea turtles making their way across tropical beaches at night.
- Experience a diverse mix of Afro-Caribbean and Asian cultures, customs and cuisines.

Credit

All students are required to take a total of 6 credit hours in Summer 2020 to participate on this program. Students should meet with their academic advisors to ensure they meet eligibility requirements and that the courses are degree applicable.

- WFSC/ENTO 300: Field Studies (3 cr.)
- WFSC/ENTO 450: Caribbean Conservation (2 cr.)
- WFSC/ENTO 451: Caribbean Research Seminar (1 cr.)

All students are also required to take WFSC/ENTO 485: Directed Studies for 1 cr. during the Spring 2020 in College Station before the program starts.



**STUDY ABROAD
PROGRAMS OFFICE**
TEXAS A&M UNIVERSITY

Common Minors

If you find a minor that interest you, check the department's website for any prerequisites, then contact an advisor in that department. This is a list of common minors and possible double majors/degrees of interest for both ECCB and RWFEM students:

Agribusiness Entrepreneurship
Agricultural Economics
Agricultural Leadership, Education and Communications
Biochemistry and Biophysics
Biological and Agricultural Engineering
Biology
Chemistry
Ecosystem Science and Management
Entomology
Extension Education
Horticultural Sciences
International Development
Nutrition and Food Science
Plant Pathology and Microbiology
Poultry Science
Recreation, Park and Tourism Sciences
Sociology
Soil and Crop Sciences
Wildlife and Fisheries Sciences
Business (Minor through the Mays Business School)

Students may seek and receive transcript recognition for a maximum of two minors. To declare a minor the student must:

- a. Obtain approval from the minor-granting department, program or college.
- b. Provide proof of minor approval to the department or major academic advisor
- c. Declare no later than last class day of the semester preceding the graduation semester.
- d. Once declared, minor requirements become graduation requirements. The minor is displayed on the transcript after graduation, but is not displayed on the diploma.

Scholastic Deficiency/Probation

In accordance with **Student Rule 12. Scholastic Deficiency/Probation** (<http://student-rules.tamu.edu/rule12>);

Departments of Ecology and Conservation Biology and Rangeland, Wildlife and Fisheries Management undergraduate students have the obligation to remain at all times in good academic standing, defined as a minimum 2.0 cumulative GPA in all course work taken at Texas A&M.

- **ECCB & RWFM majors** whose semester or cumulative GPA at Texas A&M falls below a 2.0 will be blocked from further registration and dependent on the number of grade points they are below will determine if they are placed on probation for one semester or if they will be dismissed.
- Probation students must be able to meet the minimum requirements for continuation one long semester (Fall/Spring) immediately after falling below the guidelines, if a student cannot **OR will be unable to** meet these requirements; they will be blocked and dropped from the program.

University Dismissal

In accordance with **Student Rule 12.2.4**: In the event an undergraduate student becomes scholastically deficient, he or she, may be Suspended from the university for deficient scholarship; a scholastically-deficient undergraduate student may, after review by the Associate Provost for Undergraduate Studies or designee, be suspended from the university because of scholastic deficiency by the following action:

- **Suspension**: Separation of the student from the university for a definite period of time. The student is not guaranteed readmission at the end of this period of time. The student is guaranteed a review of the case and a decision regarding eligibility for readmission.

The decision to suspend a student takes effect when the Undergraduate Academic Appeals Panel (See Student Rule 57) does not support the student's appeal, or when the appeal is waived, or when the time limit for appealing has passed. A recommendation by the Associate Provost for Undergraduate Studies or designee to suspend the student from the university because of scholastic deficiency must be made with concurrence of the student's academic Dean or designee.

Academic Integrity

In accordance with **Student Rule 20.0 Academic Misconduct** (<http://aggiehonor.tamu.edu/RulesAndProcedures/>); Academic integrity is an essential force in the academic life of a university. It enhances the quality of education and celebrates the genuine achievements of others. It is, without reservation, a responsibility of all members of the Texas A&M University Community to actively promote academic integrity. Apathy or acquiescence in the presence of academic dishonesty is not a neutral act -- failure to confront and deter it will reinforce, perpetuate, and enlarge the scope of such misconduct.

As such, a primary responsibility assumed by Texas A&M students is to promote the ideals of the Aggie Code of Honor. Various methods of encouraging integrity exist, such as setting an example for new students, education through student organizations, and student-to-student moral suasion. Students have the responsibility to confront their peers engaging in compromising situations, and if unsuccessful, to report the matter to the Aggie Honor System Office. Self-reporting is encouraged and may be considered a mitigating circumstance in the sanctioning phase of a particular case.

Departments of ECCB & RWFM students have an obligation to uphold the Aggie Code of Honor. The dean reserves the right to remove from the College of Agriculture and Life Sciences any student found to have committed an act of academic dishonesty.

AGGIE HONOR CODE

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



How to Calculate GPA

The Grade Point Average (GPA) is determined by dividing the number of grade points earned by the number of hours attempted. Courses for which a grade of S, W, Q, or NG was given are excluded from the GPA calculation. Grades of U are included in the GPA calculation for undergraduate students.

Each letter grade carries the following grade point value per credit hour:

| Letter Grade | Grade Points |
|--------------|--------------|
| A | 4.00 |
| B | 3.00 |
| C | 2.00 |
| D | 1.00 |
| F | 0.00 |
| U | 0.00 |

Example - Term GPA

The following example illustrates how to calculate a Grade Point Average (GPA) for an undergraduate student

| Course | Credit Hours | Grade | Grade Points |
|---------------|--------------|-------|--------------|
| HIST 106 | 3 | C | 6 |
| ENGL 104 | 3 | B | 9 |
| PSYC 107 | 3 | D | 3 |
| BIOL 111 | 4 | C | 8 |
| | | | |
| Total: | 13 | | 26 |

Dividing **26** grade points by **13** ATTEMPTED hours yields a GPA of **2.000**.

Cumulative GPA

To calculate a cumulative undergraduate Grade Point Average for all course work completed at Texas A&M University, you must divide the total GRADE POINTS earned for all semesters enrolled by the total number of ATTEMPTED hours for all semesters enrolled. Do not add the semester GPAs for each term then divide by the number of terms.

Only grades in coursework which the student completes at Texas A&M University, including repeated courses, will be used in determining the student's A&M GPA.

Howdy Portal

Howdy is a secure web portal at Texas A&M University that helps students, applicants, faculty, staff, and former students more easily connect to their university records and resources. **Howdy** is available at *howdy.tamu.edu* and to access requires use of the campus NetID and password. Access includes, but is not limited to, the following resources:

My Record includes the following channels:

Registration

- Registration Time Assignment
- Search Class Schedule
- Add or Drop Classes
- Registration Status (includes View Holds; Registration History)

My Schedule

- View My Schedule
- Final Exam Schedules
- Change Class/KINE Options

Grades and Transcripts

- Grades
- Credit by Examination
- Official Transcript (Order Official Transcript)
- View Unofficial Transcript

My Information

- Withhold Directory Information
- View/Update Contact Information (includes Addresses/Phones; Emergency)

Degree Evaluation

- Application for Graduation
- View Degree Evaluation
- Excess Credit Hours Rule
- Transfer Course Equivalency

Undergraduate Degree Planner

Academic Resources

Student Rules

My Finances includes the following channels:

Billing – Tuition & Fees

- Pay My Tuition/Manage My Account

Refunds

Scholarships and Financial Aid

Student Life includes the following channels:

Parking and Transformation

Student Involvement

Purchase Optional Services

Employment and Internships

You are required to maintain up-to-date local address, permanent address and telephone information and emergency contacts in your University record.

Course Registration

Registration for the fall and spring semesters is accomplished as announced by the registrar. In the preceding fall and spring semester (during November and April), a preregistration period is held for currently enrolled students. The individual registration time assignment is set by the Office of the Registrar.

An individual's preregistration start date and time is based on criteria defined on the Office of the Registrar website, *registrar.tamu.edu*. Additional information about registration, dropping and adding is available on the Registrar website, including the Schedule of Classes.

Academic advisors in the Undergraduate Advising Office offer preregistration advising.

Registration Holds. A student may be held from registering for future semesters for a number of reasons. Students can check for registration, transcript, or graduation holds on the **My Record** tab in Howdy. If a hold is in effect you will not be allowed to register.

For help or assistance with registration, contact the **Registration Help Desk**, Monday through Friday, 8 a.m. to 5 p.m., at 979.845.7117, or registration@tamu.edu.

Transfer of Course Credits

Acceptance of transfer credit for courses will generally be limited to those courses taught in the freshman and sophomore years at Texas A&M University. **Department undergraduate students must take all 300- and 400-level coursework in residence at Texas A&M University.**

Transfer of course credit is determined by Texas A&M University's Office of Admissions (OA) on a course-by-course basis. The Transfer Course Equivalency website is a searchable database of course equivalency evaluations completed by the Office of Admissions https://compass-ssb.tamu.edu/pls/PROD/bwxkwtes.P_TransEquivMain.

Another aid for students in the transfer of general academic courses between community colleges and universities is the Texas Common Course Numbering System (TCCNS). The current version of TCCNS is available directly at <http://catalog.tamu.edu/undergraduate/appendices/texas-common-course-numbering-system/>. Check the TCCNS before enrolling in courses at Texas community colleges.

Credit submitted for transfer must be on an official transcript received by the Office of Admissions, from the registrar of the institution where credit was earned. The evaluation of courses on the OAR site is a guide, and transferability of any given course is not guaranteed until evaluated upon receipt of the transcript.

Credit for courses that transfer to Texas A&M University by equivalency are shown by A&M course number in the degree evaluation.

For courses that transfer by title; degree evaluation will show only the course name from the other institution. In some cases these credits may be substituted for A&M credits through an adjustment request process.

Transfer of Course Credits (Continued)

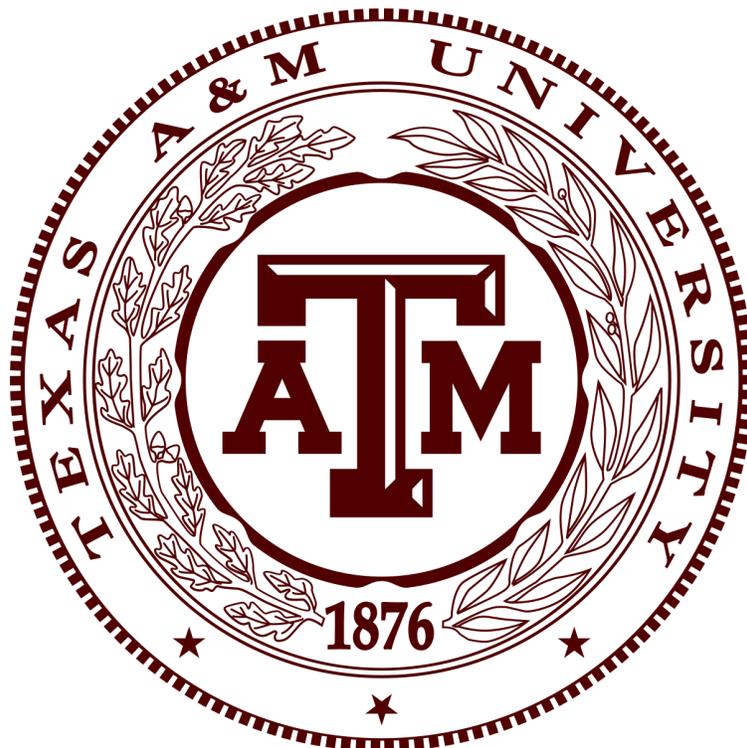
Course materials required in the petitioning process include:

1. Course syllabus including course outline.
2. Course description from catalog at institution where credit was earned.
3. Title and table of contents of the course textbook used.
4. Other useful course materials, such as class notes, homework, quizzes, exams, reports, theme papers, memo from the professor.

To petition a course adjustment, you will need to take the above materials to the department of the course you are petitioning credit for and request they review the above materials for course credit. If the transfer course is approved you will need to obtain the approval in writing and provide it to the department undergraduate advising office for processing.

Grade Point Average (GPA). Only grades in coursework which the student completes at Texas A&M University, including repeated courses, will be used in determining the student's A&M GPA. Transfer credit grades are not calculated into the A&M GPA; only transfer credit hours are awarded. Credit may be transferred for work completed with grades of "D" or better if the grade is considered passing at the transfer institution.

For additional information, contact the Office of Admissions, 750 Agronomy Road, Suite 1601, College Station, Texas 77843, or by phone at 979.845.1060



Undergraduate Degree Planner

The purpose of the Undergraduate Degree Planner is to facilitate the timely completion of your degree at Texas A&M University and to assist in planning the courses required to fulfill your degree program requirements. All students at Texas A&M are required to submit their Degree Planner annually. The submission window for submitting your degree plan for approval will open on March 1st of each year. You may complete your degree plan using the Undergraduate Degree Planner, located in the Undergraduate Degree Planner channel on the My Record tab in Howdy. Instructions for using the planner are also located in this channel. Guides for using the Undergraduate Degree Planner, including a Demo and Degree Planner Guide, are also available in Howdy.

The Department deadline for submitting and approving your degree plan is March 10th. If you do not complete your degree plan by this deadline, a registration hold will be placed on your record on March 11th. This registration hold will prevent you from registering for summer/fall courses and will only be lifted after approval of your degree planner. Students who have not completed their degree planner will be unable to schedule a pre-registration advising appointment prior to summer/fall registration. advisor.

The assistance of your academic advisor may be required to complete your degree plan. It is your responsibility to successfully complete degree program requirements. We strongly encourage you to discuss your final degree plan with your academic advisor.

Please know that the approval of this degree planner is NOT the official document that must be followed for graduation purposes. The official document to follow is the Degree Evaluation in Howdy. You are still advised to meet with your academic advisor each semester to make sure you are meeting degree requirements and making satisfactory progress towards degree completion.



Academic Rules and Definitions

You are responsible for being fully acquainted with and to comply with Texas A&M University Student Rules.

1. **Deadline to Add Courses or Drop Courses with No Record.**

- Add: 5th class day of a fall or spring semester or 4th class day of the summer terms.
- Drop: 5th class day of a fall or spring semester or 4th class day of the summer terms.

Refer to the Academic Calendar, *registrar.tamu.edu*, for the semester dates, including summer terms and 10-week summer semester.

2. **Satisfactory/Unsatisfactory.** Courses taken to satisfy degree requirements must be taken for letter grades except those taken to satisfy General Elective requirements. Complete details and information about taking courses on Satisfactory/Unsatisfactory (SU) basis

3. **Q-Drop.** Undergraduate students are permitted 4 Q-drops during their undergraduate studies at A&M; however State law prohibits students from having more than 6 dropped courses from all state institutions. Q-drops in 1-hour courses will not count in the A&M limit of 4 but will be included in the State-mandated limit of 6 drops. Refer to University Student Rules *student-rules.tamu.edu*.

Deadline to Q-drop is the 60th class day of a fall or spring semester, the 15th class day of summer term or the 35th day of a 10-week summer semester. See the Academic Calendar for dates, *registrar.tamu.edu*. Courses taught on a shortened format or between regularly scheduled terms have proportional deadlines, determined by the Office of the Registrar.

4. **Withdrawal.** To discuss this option, meet with an academic, 404 HPCT, 979.845.9733. Deadline to withdraw from the University is 60th class day of a fall or spring semester, the 15th class day of summer term or the 35th day of a 10-week summer semester. See the Academic Calendar for dates, *registrar.tamu.edu*.

5. **Transfer of Credit.** Acceptance of transfer credit will generally be limited to those courses taught in the freshman and sophomore years at Texas A&M University.

6. **Repetition of Courses.** Credit for a course can only be earned once, even if the course is repeated. Exceptions include KINE 199 or other special courses when designated.

7. **Incomplete Grades.** A temporary grade of I (Incomplete) at the end of a semester for extenuating circumstances. See Student Rules, 10.6. *student-rules.tamu.edu*.

8. **Graduation with Honors.** Requires a minimum of 60 semester hours at Texas A&M University preceding graduation. Categories for honors are designated as follows: Summa Cum Laude: 3.9 GPA or above. Magna Cum Laude: 3.7 through 3.899 GPA. Cum Laude: 3.5 through 3.699 GPA. See Student Rules, 15. Graduation with Honors, *student-rules.tamu.edu*, for complete details.

9. **Prerequisites.** It is the responsibility of the student to be sure that course prerequisites are met. Prerequisites must be listed in the undergraduate catalog or the schedule of classes. Failure to meet course prerequisites could result in a student's being dropped from the class.

Texas A&M University Common Contact Information

| Phone (979) | Center/Department/Office | Website |
|--------------------|--|--|
| 458.4900 | Academic Success Center | successcenter.tamu.edu |
| 845.4427 | Counseling & Psychological Services | caps.tamu.edu |
| 845.1637 | Disability Services | disability.tamu.edu |
| 845.5139 | Career Center | careercenter.tamu.edu |
| 847.8938 | Office of Professional School Advising | tx.ag/opsa |
| 845.3236 | Scholarships & Financial Aid | financialaid.tamu.edu |
| 845.7117 | Courses, Registration, & Scheduling | registrar.tamu.edu |
| 845.1957 | Honors and Undergraduate Research | honors.tamu.edu |
| 845.1031 | Registrar | registrar.tamu.edu |
| 847.3337 | Student Business Services | finance.tamu.edu/sbs |
| 458.8316 | Student Health Services | shs.tamu.edu |
| 845.3211 | Student Locator—Directory | gateway.tamu.edu/directory-search/ |
| 845.3111 | Student Rules | student-rules.tamu.edu/ |
| 845.0544 | Study Abroad Programs Office | studyabroad.tamu.edu/ |
| | Texas Common Course Numbering System | www.tccns.org |
| 485.4900 | Texas Success Initiative | successcenter.tamu.edu |
| 845.1050 | The Aggie Ring | aggienetwork.com/ring |
| 845.1060 | Transfer Admissions | admissions.tamu.edu |
| 845.5916 | Transition Academic Programs (GEST) | tap.tamu.edu |
| 862.7275 | Transportation Services | transport.tamu.edu |
| | | |

Notes



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AGLS ADVISING CENTER 7

**Serving the Departments of
Ecology & Conservation Biology &
Rangeland, Wildlife & Fisheries Management**

**<https://eccb.tamu.edu/>
<https://rwfm.tamu.edu/>**