Program Overview

Students seeking a Master of Science (M.S.) degree with a major in Exercise Science will appreciate the value and importance of research-based literature and have the critical thinking, research, and technical skills to:

1. understand research-based literature;
2. use innovative approaches to problem solving;
3. successfully pursue a doctoral degree in exercise science or related discipline;
4. work in athletic, clinical (e.g., cardiopulmonary rehabilitation and diagnostic testing), educational, and fitness settings; and
5. sit for advanced professional certifications (e.g., the American College of Sports Medicine Certified Clinical Exercise Specialist, Certified Health Fitness Specialist, Certified Strength and Conditioning Specialist, or Registered Clinical Exercise Physiologist).

Application Requirements

The items listed below are required for admission consideration for applicable semesters of entry during the current academic year. Submission instructions, additional details, and changes to admission requirements for semesters other than the current academic year can be found on The Graduate College’s website (http://www.gradcollege.txstate.edu). International students should review the International Admission Documents page (http://mycatalog.txstate.edu/graduate/admission-documents/international/) for additional requirements.

Application Requirements

The items listed below are required for admission consideration for applicable semesters of entry during the current academic year. Submission instructions, additional details, and changes to admission requirements for semesters other than the current academic year can be found on The Graduate College’s website (http://www.gradcollege.txstate.edu). International students should review the International Admission Documents page (http://mycatalog.txstate.edu/graduate/admission-documents/international/) for additional requirements.

- completed online application
- $55 nonrefundable application fee
- $90 nonrefundable application fee for applications with international credentials
- baccalaureate degree from a regionally accredited university (Non-U.S. degrees must be equivalent to a four-year U.S. Bachelor’s degree. In most cases, three-year degrees are not considered. Visit our International FAQs (https://www.gradcollege.txstate.edu/international/language.html#waiver).
- official transcripts from each institution where course credit was granted
- a 2.75 overall GPA or a 2.75 GPA in the last 60 hours of undergraduate course work (plus any completed graduate courses)
- background course work (at least 9 hours of exercise science undergraduate credit hours. Students who do not have these hours may be required to complete leveling courses.)
- GRE not required
- resume/CV
- statement of purpose (approximately 500 words, typed and double-spaced) addressing the following:
  - professional goals
  - reasons for pursuing education and training in exercise science
  - summary of major strengths and weaknesses with respect to being admitted into the program
  - experiences and/or research interests that may contribute to the program
- three letters of recommendation (including at least two academic references) regarding professional competence and character

Approved English Proficiency Exam Scores

Applicants are required to submit an approved English proficiency exam score that meets the minimum program requirements below unless they have earned a bachelor’s degree or higher from a regionally accredited U.S. institution or the equivalent from a country on our exempt countries list (http://www.gradcollege.txstate.edu/international/faqs.html)

- official TOEFL iBT scores required with a 78 overall
- official PTE scores required with a 52
- official IELTS (academic) scores required with a 6.5 overall and minimum individual module scores of 6.0
- official Duolingo Scores required with a 110 overall
- official TOEFL Essentials scores required with an 8.5 overall

This program does not offer admission if the scores above are not met.

Degree Requirements

The Master of Science (M.S.) degree with a major in Exercise Science requires 36 semester credit hours.

As background prerequisites, an Exercise Science major is expected to have a minimum of 9 semester hours of exercise science course work on the bachelor’s degree. Students who do not have these hours may be required to complete leveling courses.

Course Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>ESS 5304</td>
<td>Motor Learning and Performance</td>
<td>3</td>
</tr>
<tr>
<td>ESS 5309</td>
<td>Biomechanics for Exercise &amp; Sports Science</td>
<td>3</td>
</tr>
<tr>
<td>ESS 5346</td>
<td>Research Methods in Health and Human Performance</td>
<td>3</td>
</tr>
<tr>
<td>ESS 5356</td>
<td>Applied Statistics in Health and Human Performance</td>
<td>3</td>
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Prescribed Electives

Choose 3 hours from the following:

- ESS 5306 Advanced Exercise Physiology
- ESS 5310 Cardiopulmonary Exercise Physiology
- ESS 5311 Applied Neuromuscular and Skeletal Muscle Physiology

Choose 15 hours from the following:

- ESS 5110 Research Seminar (May be repeated twice)
Master of Science (M.S.) Major in Exercise Science (Non-thesis Option)

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>ESS 5305</td>
<td>Advanced Fitness Assessment and Exercise Prescription</td>
</tr>
<tr>
<td>ESS 5306</td>
<td>Advanced Exercise Physiology</td>
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<tr>
<td>ESS 5307</td>
<td>Advanced Resistance Training and Conditioning</td>
</tr>
<tr>
<td>ESS 5308</td>
<td>Physical Activity, Disease Prevention and Treatment</td>
</tr>
<tr>
<td>ESS 5310</td>
<td>Cardiopulmonary Exercise Physiology</td>
</tr>
<tr>
<td>ESS 5311</td>
<td>Applied Neuromuscular and Skeletal Muscle Physiology</td>
</tr>
<tr>
<td>ESS 5312</td>
<td>Applied Exercise Metabolism</td>
</tr>
<tr>
<td>ESS 5322</td>
<td>Inclusion and Diversity in Physical Activity and Sport</td>
</tr>
<tr>
<td>ESS 5327</td>
<td>Application of Strength and Conditioning Principles</td>
</tr>
<tr>
<td>ESS 5328</td>
<td>Principles of Endurance Training</td>
</tr>
<tr>
<td>ESS 5344</td>
<td>The Science of Teaching in Health and Human Performance</td>
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<tr>
<td>ESS 5347</td>
<td>Independent Study in Exercise Science</td>
</tr>
<tr>
<td>ESS 5353</td>
<td>Curriculum Design, Implementation and Evaluation in Diverse Physical Activity Settings</td>
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<tr>
<td>ESS 5354</td>
<td>Developmental Sports Education: Youth Participants</td>
</tr>
<tr>
<td>ESS 5355</td>
<td>Developmental Sports Education: High-Level Athletes and Coaching Effectiveness</td>
</tr>
<tr>
<td>ESS 5398</td>
<td>Internship in Exercise and Sports Science</td>
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</tbody>
</table>

Choose 6 hours from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>AT 5310</td>
<td>Cellular Physiology</td>
</tr>
<tr>
<td>AT 5311</td>
<td>Pediatric Obesity</td>
</tr>
<tr>
<td>BIO 5441</td>
<td>The Science of Nutrition and Exercise</td>
</tr>
<tr>
<td>NUTR 5364</td>
<td>Macronutrient Metabolism</td>
</tr>
<tr>
<td>PH 5321</td>
<td>Advanced Health Behavior Theory</td>
</tr>
<tr>
<td>PHIL 5322</td>
<td>Professional Ethics</td>
</tr>
<tr>
<td>PHIL 5326</td>
<td>Philosophy and Sport</td>
</tr>
<tr>
<td>PHIL 5327</td>
<td>Medical Ethics and Bioethics</td>
</tr>
<tr>
<td>PSY 5335</td>
<td>Foundations of Health Psychology</td>
</tr>
</tbody>
</table>

Total Hours 36

Comprehensive Examination Requirement

The comprehensive take-home exam is an independent, individual assignment where students will apply scholarly principles from at least two sub-disciplines within Exercise Science for practical use. The final product should demonstrate the student's mastery of content in two sub-disciplines and inform practitioners or organizations regarding the efficacy of a set of strategies, lessons, or a program. Examples include creating an innovative program related to exercise and sports science (e.g., training or fitness program, rehabilitation program), creating a series of teaching lessons for a specific group of students, conducting a program evaluation, creating a website to inform practitioners on a topic related to exercise and sports science, or writing a paper that incorporates practical recommendations based on literature in the field. The oral defense could consist of a question and answer session or a concise presentation followed by questions. If the final product and/or oral defense does not meet requirements, graduation may be delayed until the appropriate work is completed.

Students who do not successfully complete the requirements for the degree within the timelines specified will be dismissed from the program.

Master's level courses in Health and Human Performance: ESS

Courses Offered

Exercise Science Specialization (ESS)

ESS 5101. Graduate Assistant Development.
This course is required of all graduate teaching and instructional assistants in the department. This course provides regular in-service and planned periodic evaluations of instructional and professional responsibilities. This course does not earn graduate degree credit.
1 Credit Hour. 1 Lecture Contact Hour. 0 Lab Contact Hours.
Course Attribute(s): Graduate Assistantship|Exclude from Graduate GPA
Grade Mode: Leveling/Assistantships

ESS 5110. Research Seminar.
The focus of this course engages students in research and professional development in Exercise and Sports Science. This seminar will allow students to gain exposure to a variety of scholarly activities in an interdisciplinary setting.
1 Credit Hour. 1 Lecture Contact Hour. 0 Lab Contact Hours.
Course Attribute(s): Exclude from 3-peat Processing
Grade Mode: Standard Letter

ESS 5199B. Thesis.
This course represents a student's continuing thesis enrollment. The student continues to enroll in this course until the completed thesis is submitted for binding. Prerequisite: ESS 5399A.
1 Credit Hour. 1 Lecture Contact Hour. 0 Lab Contact Hours.
Grade Mode: Credit/No Credit

ESS 5201. Graduate Assistant Development.
This course is required of all graduate teaching and instructional assistants in the department. This course provides regular in-service and planned periodic evaluations of instructional and professional responsibilities. This course does not earn graduate degree credit.
2 Credit Hours. 2 Lecture Contact Hours. 0 Lab Contact Hours.
Course Attribute(s): Graduate Assistantship|Exclude from Graduate GPA
Grade Mode: Leveling/Assistantships

ESS 5299B. Thesis.
This course represents a student's continuing thesis enrollment. The student continues to enroll in this course until the completed thesis is submitted for binding. Prerequisite: ESS 5399A.
2 Credit Hours. 2 Lecture Contact Hours. 0 Lab Contact Hours.
Grade Mode: Credit/No Credit
**ESS 5304. Motor Learning and Performance.**
This course is designed to provide students the foundation for understanding the principles involved in enhancing motor skill acquisition, and physiological, neurological, and psychological factors affecting motor learning and performance. Inquiry is made into the various motor learning theories and concepts.
*3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.*
*Grade Mode: Standard Letter*

**ESS 5305. Advanced Fitness Assessment and Exercise Prescription.**
This course provides an intensive study of current scientifically based exercise testing and prescription procedures. Students will learn how to evaluate fitness and prescribe exercise through laboratory experiences.
*3 Credit Hours. 2 Lecture Contact Hours. 1 Lab Contact Hour.*
*Grade Mode: Standard Letter*

**ESS 5306. Advanced Exercise Physiology.**
This advanced course will provide students with a thorough understanding of the acute responses to exercise and the physiological adaptations that occur in response to exercise training. Additional topics to be covered include environmental influences, aging, and sex differences.
*3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.*
*Grade Mode: Standard Letter*

**ESS 5307. Advanced Resistance Training and Conditioning.**
This course will include the development, instruction, and evaluation of resistance training exercises and programs for diverse populations and settings. Physiological and mechanical principles related to resistance training will be applied to study human performance, injury prevention, and rehabilitation.
*3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.*
*Grade Mode: Standard Letter*

**ESS 5308. Physical Activity, Disease Prevention and Treatment.**
This course will provide students with opportunities to examine the role of physical inactivity in the development of chronic diseases and the benefits of activity in prevention efforts. A special emphasis will be placed on activity assessment and intervention research.
*3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.*
*Grade Mode: Standard Letter*

**ESS 5309. Biomechanics for Exercise & Sports Science.**
Review of current research and research techniques in the biomechanics of exercise and sport science. Students will develop skills in reviewing, planning, and conducting biomechanical research.
*3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.*
*Grade Mode: Standard Letter*

**ESS 5310. Cardiopulmonary Exercise Physiology.**
The course will provide students with a thorough understanding of the structure, function, neural mechanisms, and integrated responses of the human cardiopulmonary system to acute and chronic exercise. In addition, basic cardiopulmonary pathology, pharmacology, and electrocardiography will be introduced.
*3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.*
*Grade Mode: Standard Letter*

**ESS 5311. Applied Neuromuscular and Skeletal Muscle Physiology.**
The course will provide students with a thorough understanding of the structure and function of neuromuscular and skeletal muscle physiology. This course will examine mechanisms that regulate skeletal muscle force production and human performance in response to acute and chronic exercise. In addition, advanced laboratory techniques will be introduced.
*3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.*
*Grade Mode: Standard Letter*

**ESS 5312. Applied Exercise Metabolism.**
This course will provide students a thorough understanding of exercise metabolism. Students will develop advanced knowledge of the influence of various environmental and physiological factors on metabolism during exercise and the impact on physical performance and recovery. Students will also examine the relationships between metabolic factors and chronic diseases.
*3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.*
*Grade Mode: Standard Letter*

**ESS 5313. Proprioception and Neuromuscular Control in Rehabilitation.**
This course provides for an advanced study of the concepts, theories, and current research related to proprioception and neuromuscular control as applied to the prevention, diagnosis, and clinical management of sport-related musculoskeletal injuries, neuromuscular disease, and concussions. Prerequisite: Department approval.
*3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.*
*Grade Mode: Standard Letter*

**ESS 5314. Biomechanics of Musculoskeletal Injury.**
This course focuses on the application of biomechanical principles to the pathoetiology, diagnosis, and physiological capacity for healing of injuries to bone, ligament, tendon, cartilage, and other human tissues, with an emphasis on current injury research. Prerequisite: Department approval.
*3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.*
*Grade Mode: Standard Letter*
ESS 5317. Exercise Physiology.
This leveling course provides an overview of the acute and chronic physiological responses to exercise. Emphasis is on muscle bioenergetics, muscle contractile properties, optimizing human performance through training and supplementation, as well as cardiopulmonary and endocrine responses to exercise. This course does not earn graduate degree credit. Prerequisite: BIO 2430 or equivalent.
Grade Mode: Leveling/Assistantships
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

This course explores and critiques both established and novel exercise testing and training practices for athletes competing in endurance sports. Emphasis is on demonstrating an ability to develop testing and training procedures using evidence-based methods for endurance athletes.
Grade Mode: Leveling/Assistantships
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

ESS 5319. Biomechanics.
This leveling course provides an introduction to the mechanical foundations of anatomical function and human movement. Qualitative and quantitative biomechanical analyses of human movement are introduced to inform the prescription of technique, equipment, and training interventions. This course does not earn graduate degree credit. Prerequisite: BIO 2430 or equivalent with a grade of "D" or better.
Grade Mode: Leveling/Assistantships
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

ESS 5320. Biomechanics.
This leveling course provides an introduction to the mechanical foundations of anatomical function and human movement. Qualitative and quantitative biomechanical analyses of human movement are introduced to inform the prescription of technique, equipment, and training interventions. This course does not earn graduate degree credit. Prerequisite: BIO 2430 or equivalent with a grade of "D" or better.
Grade Mode: Leveling/Assistantships
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

This leveling course provides students with an understanding of the physiological, neurological, and psychological factors affecting performance and acquisition of motor skills. Students will examine the structural components underlying the learning of motor skills and draw upon examples from sport, physical activities, and rehabilitation. This course does not earn graduate degree credit.
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

ESS 5322. Inclusion and Diversity in Physical Activity and Sport.
This course is designed to prepare physical activity and sport educators with knowledge, skills, and strategies to create inclusive learning environments. Culturally responsive teaching strategies that best accommodate the individual needs of children, adolescents, and adults, with diverse ethnic, racial, cultural, socio-economic, physical, and cognitive needs will be emphasized. (MULT).
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

Strength and conditioning programming techniques will be the focus, including appropriate assessment and exercise prescription for improved sport performance and injury prevention. This course will include both classroom instruction and hands-on experience utilizing advanced technologies and traditional and non-traditional equipment in the field of strength and conditioning. This course will also cover methods of evaluating athletic abilities to monitor progress of training that will guide exercise prescription. Prerequisite: ESS 5307 with a grade of "C" or better.
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

This course explores and critiques both established and novel exercise testing and training practices for athletes competing in endurance sports. Emphasis is on demonstrating an ability to develop testing and training procedures using evidence-based methods for endurance athletes.
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

ESS 5325. Exercise Physiology.
This course explores and critiques both established and novel exercise testing and training practices for athletes competing in endurance sports. Emphasis is on demonstrating an ability to develop testing and training procedures using evidence-based methods for endurance athletes.
Grade Mode: Leveling/Assistantships
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

A study of research methods related to techniques for searching the professional research literature, understanding, planning, and conducting professional research projects, as well as development of skills for writing research proposals related to human performance.
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

ESS 5327. Independent Study in Exercise Science.
The course allows students to receive individualized instruction while working on a professional project with a supervising faculty member. This course will require students to enhance their writing, research, teaching, and/or presentation skills. Repeatable once for credit.
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

This leveling course provides students with an understanding of the physiological, neurological, and psychological factors affecting performance and acquisition of motor skills. Students will examine the structural components underlying the learning of motor skills and draw upon examples from sport, physical activities, and rehabilitation. This course does not earn graduate degree credit.
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

ESS 5329. Biomechanics.
This leveling course provides an introduction to the mechanical foundations of anatomical function and human movement. Qualitative and quantitative biomechanical analyses of human movement are introduced to inform the prescription of technique, equipment, and training interventions. This course does not earn graduate degree credit. Prerequisite: BIO 2430 or equivalent.
Grade Mode: Leveling/Assistantships
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.

ESS 5330. Motor Learning.
This leveling course provides students with an understanding of the physiological, neurological, and psychological factors affecting performance and acquisition of motor skills. Students will examine the structural components underlying the learning of motor skills and draw upon examples from sport, physical activities, and rehabilitation. This course does not earn graduate degree credit.
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.
ESS 5354. Developmental Sports Education: Youth Participants.  
This course is designed to provide sport educators with theory,  
research, and application strategies to implement developmentally  
appropriate sports programs for youth participants. Social, psychological,  
pedagogical, philosophical, and physical variables impacting youth in  
sport are examined. Emphasis is placed on promoting positive youth  
development by applying evidence-based practices.  
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.  
Grade Mode: Standard Letter

ESS 5355. Developmental Sports Education: High-Level Athletes and  
Coaching Effectiveness.  
This course is designed to provide sport educators with theory, research,  
and practical strategies to implement developmentally appropriate sports  
programs for high-level athletes. Psychological, social, and physical  
 aspects related to athletes' success and well-being are examined.  
Research on coaching effectiveness is also explored with emphasis on  
applying evidence-based practices.  
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.  
Grade Mode: Standard Letter

A study of quantitative statistical methods for planning and conducting  
experimental and correlational research, as well as techniques for  
statistical data analysis and interpretation applicable to health and  
human performance.  
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.  
Grade Mode: Standard Letter

This course is designed for students to obtain the Red Cross Water  
Safety Instruction (WSI) certification, and learn how to teach using a  
Mastery Motivational Climate/TARGET approach. More than half of the  
semester will involve providing swim lessons to students grades K-6 from  
a San Marcos school. Students must be able to perform the following  
skills: front crawl, back crawl, breaststroke, elementary backstroke and  
sidestroke for 25 yards; butterfly for 15 yards; back float and tread water  
for 1 minute. Students with a current WSI certification will be exempt  
from the required WSI lab at the beginning of the semester.  
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.  
Grade Mode: Standard Letter

ESS 5399A. Thesis.  
This course represents a student's initial thesis enrollment. No thesis  
course credit is awarded until the student has completed the entire thesis  
required in ESS 5399B. Prerequisites: ESS 5346 and ESS 5356 all with a  
grade of "C" or better.  
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.  
Grade Mode: Credit/No Credit

ESS 5399B. Thesis.  
This course represents a student's continuing thesis enrollment. The  
student continues to enroll in this course until the completed thesis is  
submitted for binding. Prerequisite: ESS 5399A.  
3 Credit Hours. 3 Lecture Contact Hours. 0 Lab Contact Hours.  
Grade Mode: Credit/No Credit

ESS 5599B. Thesis.  
This course represents a student's continuing thesis enrollment. The  
student continues to enroll in this course until the completed thesis is  
submitted for binding. Prerequisite: ESS 5399A.  
5 Credit Hours. 5 Lecture Contact Hours. 0 Lab Contact Hours.  
Grade Mode: Credit/No Credit

ESS 5698. Internship in Exercise and Sports Science.  
This full-time internship provides students with a minimum of 480  
hours of field experience. Students will work with children, adults, older  
individuals, or athletes in exercise or health care settings, and prescribe  
and supervise age and fitness appropriate exercise programs and  
perform comprehensive health-related assessments.  
6 Credit Hours. 0 Lecture Contact Hours. 40 Lab Contact Hours.  
Grade Mode: Standard Letter

ESS 5999B. Thesis.  
This course represents a student's continuing thesis enrollment. The  
student continues to enroll in this course until the completed thesis is  
submitted for binding. Prerequisite: ESS 5399A.  
9 Credit Hours. 9 Lecture Contact Hours. 0 Lab Contact Hours.  
Grade Mode: Credit/No Credit

ESS 5398. Internship in Exercise and Sports Science.  
This 240-hour internship provides students with work-related experience  
with children, adults, older individuals, or athletes in exercise settings.  
Students are provided an opportunity to prescribe and supervise age-  
and fitness-appropriate exercise programs and perform exercise tests.  
Prerequisite: ESS 5306 with a grade of "C" or better.  
3 Credit Hours. 0 Lecture Contact Hours. 20 Lab Contact Hours.  
Grade Mode: Standard Letter