New Undergraduate Course Approval Cover Form
Montana State University

This four-page form collects basic information about the proposed new course, provides information on the approval process, and includes all required approvals. Additional information (see INFO sheet) is also required as part of the New Course Packet.

Proposed New Course Information

Requested Rubric, Course Number, Core Designation (if needed):  EQUUS 424  
Example: PHL 361 RH

Course Title:  EQUINE EXERCISE PHYSIOLOGY
Abbreviated Course Title (≤ 30 chars):  EQUINE EXERCISE PHYSIOLOGY
First Semester to be Offered:  Spring 15
Submitted by:  S. J. Moreaux, Associate Prof. Animal and Range Science
Submitter’s Contact Info: Phone, Email:  moreaux@montana.edu
Instructor:  Tamara Parrott, NTT Instructor
Department:  Animal and Range Sciences
College:  College of Agriculture

New Course Review Process

Instructor completes the New Course Packet, with Core information if a Core designation is requested.
Instructor checks for "equivalent" course in the MUS system and recommends a common or unique course number.

Department Head’s signature indicates that course has been approved by the process used within the Department.

The Chair of the College Curriculum Committee signs to indicate College academic approval.
The College Dean signs to indicate that adequate resources are available to offer the course. Supporting information (Dean’s Statement) is typically required.
The New Course Packet (as PDF) is uploaded to the Provost’s Office server for distribution to other committees.
Course requests are sent to Curriculum and Program Committee (CPC). Core reviews are sent to appropriate Core subcommittee. Committees work in parallel when possible to speed approval process. Special topics courses (291,491) skip the CPC review (limited to two years.)
Provost’s Office reviews the new course request. New courses are submitted to MUS for Common Course Number (CCN) review. Dean and Department informed upon approval.
Approved new course sent to Registrar for inclusion in the Catalog and Schedule of Classes

Note: This diagram illustrates the typical flow path, but at any review step there can be a request for additional information or modifications. Careful review in early steps is the best way to speed the overall process. * Special topics courses (491) require fewer signatures, but cannot be offered more than two times without committee review.
INFORMATION NEEDED FOR COMMON COURSE NUMBERING

The process for identifying a common course number for a new course is as follows:

1. Course learning outcomes are prepared for the new course.
2. The person submitting the new course request looks at the CCN website to see if a course with similar outcomes already exists in the MUS system.

   www.mus.edu/Qtools/CCN/ccn_default.asp

   • If a course exists with at least 80% of the same outcomes, the course is considered “equivalent” to the proposed new course, and the new course should use the existing rubric and course number.
   • If no “equivalent” course is found, the person submitting the new course request should identify a unique course number that has not been used by any other course in the MUS system.
3. The requested rubric and course number are submitted as part of the new course packet.
4. The Provost’s Office submits the learning outcomes and the requested rubric and course number to the MUS to have a course number assigned to the course. (This will typically be the requested course number, but it could be changed.)
5. The assigned common course number is reported back to the person submitting the new course request.

Requested Rubric, Course Number, Core Designation (if needed):

   EQUS 424
   EQUINE EXERCISE PHYSIOLOGY

   Abbrev. Course Title (≤ 30 char):
   EQUINE EXERCISE PHYSIOLOGY

   Credits:
   3

   Department Offering Course:
   Animal and Range Sciences

   College:
   College of Agriculture

   Is this course “equivalent” to a course in the MUS System?: □ Yes    ☑ No

   Learning Outcomes for the Course:

   1. Learn terminology and evidenced-based concepts related to physiology of exercise, conditioning, training and equine athletic performance.

   2. Learn the anatomy and physiology of the cardiovascular and respiratory systems.

   3. Learn the physiological and biochemical responses and interactions of various systems during exercise, conditioning, training, and athletic performance.

   4. Critically evaluate the suitability of various conditioning and training regimes for various classes of equine athletes.

   5. Learn to compare and contrast methods of assessing and monitoring conditioning, training and athletic fitness in the horse.

   6. Relate pre-requisite knowledge of exercise physiology to the health and welfare of the performance horse.

   7. Understand the major causes of poor performance in the equine athlete. evaluate diagnostic methods and
INFORMATION REQUIRED BY THE REGISTRAR

The data needed to enter the new course into the MSU Catalog and Schedule of Classes is collected on this page. Once the new course has been approved, this page is automatically forwarded to the Registrar for data entry.

Assigned Rubric, Course Number, Core Designation (if needed): EQUS 424

Course Title (for Catalog): EQUINE EXERCISE PHYSIOLOGY

Course Title (for Schedule of Classes, 30 characters, max.): EQUINE EXERCISE PHYSIOLOGY

First Semester to be Offered: Spring 15

Restricted Entry/Consent of Instructor Required: ☐ Yes ☐ No

Instructor’s GID (last 4 digits only): 

Department Offering Course: Animal and Range Sciences

College: College of Agriculture

Is the requested course number available? (x4155 to check): ☑ Yes ☐ No

Frequency of course offering: ☑ Annually ☐ Alternate Years, starting _________

Semester(s) offered (check all that apply): ☐ Summer ☐ Fall ☐ Spring

Summer Options (check all that apply): ☐ First 6 weeks ☐ Second 6 weeks ☐ 12 weeks

Credits by mode of instruction: Lecture: 3

Seminar: 

Independent Study: 

Lab/Studio: 

Recitation/Discussion: 

TOTAL CREDITS: 3

Primary Mode(s) of Delivery: ☑ Face-to-face ☐ On-Line Only ☐ Web-Enhanced (small on-line comp.)

☐ Blended (significant on-line portion)

Time and Location – Call the Registrar's Office at x4155 to find a time and location for the course.

Assigned Day(s): ☐ M ☑ Tu ☐ W ☐ Th ☐ F ☐ Sa ☐ Su

Assigned Time(s): 0800-0915

Assigned Building: Linfield

Assigned Room: 109

Capacity (room capacity, or enrollment “cap”): 40

Co- and Pre-Requisites – Courses numbered 200 and above are normally expected to have prerequisites. When listing multiple prerequisites, please separate courses with “and” if both are required, or “or” if only one is required.

Prerequisite(s): ANSC265/266, ANSC320, EQUS347

Co-Requisite(s): 

Course Description – Provide a course description of 40 words or less for the MSU Catalog.

This course seeks to provide a detailed understanding of equine exercise physiology. Topics covered: physiological interactions of various systems during exercise, conditioning, training, and athletic performance; conditioning and training regimes and methods of assessing athletic fitness in horses.
DEAN'S STATEMENT

The reviewing committees are being asked to take a closer look at the resources required for each proposed new course. In many cases new courses will replace existing courses and the new course request is effectively resource neutral, however that is not always the case. For example, a new elective course that would result in distributing an existing student population across a larger number of courses would represent a significant increase in expenditures for the new course, and no increase in total student credit hours. A funding mechanism for such a course would need to be identified.
The Dean's Statement is the place to document how the costs of the proposed new course will be covered.

See attached statement from the Interim Dean Duff
September 8, 2014

TO: Ron Larsen, Associate Provost

FR: Glenn C. Duff, Interim Dean and Director

RE: Dean’s Statement for EQUS 424 Equine Exercise Physiology

The Department of Animal and Range Sciences has requested a new undergraduate course entitled “Equine Exercise Physiology” (EQUS 424). This course has been taught the last 2 years as an experimental course. The course has been created from the investment proposal a couple years ago and has been paid for as NTT support from the department. This course has been taught by Dr. Tammara Parrott (DVM) and Dr. Parrott has applied to the NTT applicant pool for the College of Agriculture.

Please let me know if you need any additional information.
TO: Ron Larsen, Associate Provost
FROM: Patrick Hatfield, Interim Department Head
RE: Department Head Statement for EQUS 424 Equine Exercise Physiology
DATE: September 15, 2014

I am writing in support of a new undergraduate course entitled “Equine Exercise Physiology” (EQUS 424). This course has been taught the last two years as an experimental course.

Dr. Tamara Parrott has taught this course the last two years. She is not a member of the regular faculty. Dr. Parrot is qualified to teach this course based on her graduate education, 5 years of equine veterinary practice experience, 10 years horse husbandry and conditioning experience and past teaching experiences. Dr. Parrott has taught biology and chemistry at the university level and this course twice previously.

Please let me know if you need any additional information in this matter.
Tamara K. Parrott
5 W. Koch St Apt 1
Bozeman, MT 59715
(973) 670-9555
tamaraparrott@yahoo.com

Objective

- Obtain a teaching position at an educational institution dedicated to creating a positive learning environment in order to enhance the future of students

Education

- **Colorado State University**, Fort Collins, Colorado
  Doctor of Veterinary Medicine
  - 2011

- **Brown University**, Providence, Rhode Island
  Major: Biology
  - 2001

- **The School for Field Studies-Center for Wildlife Management Studies**
  Semester Abroad: Nairobi, Kenya
  Research Project: Assessed population of indigenous fauna in Nairobi National Park and presented evaluation and suggestions to the Kenya Wildlife Service
  - 1999

Veterinary Employment

- **Associate Veterinarian**
  **Montana Equine Medical and Surgical Referral Center**, Three Forks, MT
  Hired post-internship to expand the ambulatory clientele of the practice while still participating in emergency and referral duties
  - June 2012 - present

- **Equine Internship**
  **Montana Equine Medical and Surgical Referral Center**, Three Forks, MT
  Completed year long internship in equine emergency, medicine, surgery, theriogenology, and preventative medicine which included supervised (under board certified mentors) and independent work
  - May 2011-May 2012

Veterinary Related Work Experience

- **Adjunct Professor**
  **Montana State University**, Bozeman, MT
  Responsible for designing senior elective course: Equine Exercise Physiology
  - Spring 2013

- **Surgery Lab Assistant**
  **CSU Veterinary Teaching Hospital**, Fort Collins, CO
  Assistant anesthetist to primary lab technician for Student Surgical Skills Laboratories
  2 hours per day 3 weeks per semester while in veterinary school
  - 2009-May 2011
* Veterinary Assistant: Equine
  - Cody Equine (a division of Sheridan Equine), Cody, WY  May-Aug. 2009
Responsibilities included assisting with equine surgery and anesthesia, dentistry, vaccinations, lameness exams, radiographs, field castrations, ultrasound, endoscopy, laceration repair and reproduction.

Recent Animal Experience

* Animal Care: Student Supervisor  Feb. 2006-May 2011
  10 hours per week during academic year
  CSU Veterinary Teaching Hospital, Fort Collins, CO
  Student supervisor of the animal care program designed to maintain high biosecurity standards in the CSU Veterinary Teaching Hospital

* Assistant Trainer  Feb. 2007-May 2009
  Stove Prairie Ranch, Bellvue, CO
  Assisted trainer for performance Morgan horses: groomed, exercised and cared for barn of seven show horses (foals to finished horses)

* Head Wrangler/Lodge Manager  May-Aug 2004-2009
  Goff Creek Lodge, Cody, WY
  Responsibilities included: maintaining individual and herd health for a 45 horse dude string, organizing horse operation, overseeing employees, office management and customer service

* Animal Care Taker  1988-1997
  Heronsflight Farm, Wantage, NJ
  Family farm: responsibilities included lambing, kidding, de-worming, tagging, banding, docking and daily care for a flock of 250 sheep and goats. Also raised and cared for horses, donkeys, sheepdogs, and flock guardian dogs

Work Experience

  The Publick School, Hightstown, NJ
  Responsible for teaching chemistry and biology in addition to coaching varsity softball and girls basketball at a private secondary boarding school. Supervised a girls' dormitory which included: overseeing dorm staff, planning dorm activities, conflict resolution, and homesickness counseling. Also a member of Head Master's advisory committee, designed to facilitate interaction between faculty and administration
Volunteer Experience

- Rural Area Veterinary Services (RAVS), North/South Dakota (Equine)
- Rural Area Veterinary Services (RAVS), South Dakota (Small Animal)
- Middle Level Fifth/Sixth Grade Basketball Coach
- G.A.L.T Therapeutic Riding Center for Handicapped Children
- Winslow Foundation Therapeutic Riding Center for Handicapped Children

Professional Memberships

- American Veterinary Medical Association
- American Association of Equine Practitioners
- Montana Veterinary Medical Association

Awards

- Salisbury Veterinary Scholarship (2010)
- Rural Area Veterinary Services Scholarship (2009)
- Captain, Brown University Division I Softball Team (2000, 2001)
- 1st Team All-Northeast Softball (2000)
- 1st Team All-Ivy Softball (2000)
- Honorable Mention All-Ivy Softball (1998, 1999)

References

Peter Heidmann, DVM MPH
DACVIM
Practice Owner
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AI Flint, DVM PhD
Associate Veterinarian
4th year Surgery Resident
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Shannon Moreaux, DVM
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New Undergraduate Course Narrative  
Montana State University  
Updated August 23, 2012

Please provide the following information in narrative format. Substantive responses to all criteria are required. Although not required, a draft syllabus can also be helpful to the committee in understanding the details of the proposed course.

General Course Information
1. Requested Rubric, Course Number, and Core Designation (if any)

> EQUUS 224

2. Course Title

> Equine Exercise Physiology

3. Provide a general description of the course explaining the need for the course, its goals, and its overall structure. This is the most important part of the application and should offer a good sense of what students will experience by taking this class.

> General Description and Goals:

The Provost has allocated permanent funding for this course because there is a need to increase the number of disciplinary courses offered for equine option students, in particular courses steeped in fundamental biological science. Currently, students in the equine option have limited upper level science courses that focus on horses. This will be an upper level physiology course with a strategic and specific focus on the equine musculoskeletal, cardiovascular and respiratory systems. The course will cover the following topics: practical aspects of energy production in the exercising horse, the respiratory, cardiovascular, musculoskeletal, thermoregulatory systems in the athletic horse, and how these systems interact to support exercise, the practical aspects of adaptation to training of athletic horses, and common athletic injuries associated with conditioning practices. Not only will this course serve as a fundamental resource for equine science students, it will be of interest to other animal science students, pre-veterinary students and biological science majors.

Goals of the course:
The goals for this course, Equine Exercise Physiology, are for students to:
1. Learn how various physiologic systems function during, and adapt to, exercise.
2. Integrate foundational knowledge of biochemical pathways for aerobic and anaerobic energy production with new knowledge of nutrient metabolism and physiologic systems responses to exercise and conditioning.
3. Learn to monitor and assess levels of fitness in horse.
4. Learn to develop and justify conditioning programs for various types, breeds and uses of horses using scientific (evidence based) principles.
5. Learn to incorporate best practice into the care of athletic horses.
6. Be able to identify poor performance indicators and the most common causes.
7. Be able to critique about the various sources of available information with regard to exercise and training.
8. Understand the limitations of predicting performance potential in horses.

Overall Structure:
This course will be presented as a 3 credit lecture, discussion, self-inquiry series supported by multiple textbook reviews, scientific study reviews and periodic practical, applied (real, on campus) interactive applications.

> Based on what types of student work (e.g., tests, homework assignments, papers, performances, etc.) will grades be determined?

> Student grades in this course will be based on 3 midterm written exams, 4 written quizzes, 1 scientific review paper, class participation, group activities and practical, applied homework assignments.

> Provide a course content outline containing all major topics plus a brief description of the material to be covered under each major topic heading.

> Course content outline:

1. The Horse as an Athlete: Introduction
   - A Physiological Overview
2. Exercise Testing in the Field
   - Methods of practical fitness evaluation
3. Muscle Physiology:
   - Responses to Exercise and Training
4. Tendon and Ligament Physiology:
   - Responses to Exercise and Training
5. Joint Physiology:
   - Responses to Exercise and Training
6. Biomechanics of Locomotion in the Athletic Horse
   - Review of biodynamic terminology and assessment tools
7. Cardiovascular Function and O2 Transport: Responses to Exercise and Training
8. Metabolic Responses to Exercise and Training
9. Endocrine Alterations in the Equine Athlete
10. Nutritional Management of the Equine Athlete
    - Review
11. Body Fluids and Electrolytes
    - Overview
    - Responses to Exercise and Training
12. Muscle and Blood Acid-Base Physiology
    - Overview
    - Response to exercise and training
13. Thermoregulation and Exercise-Associated Heat Stress

14. Hematologic and Serum Biochemical Responses to Exercise and Training
   - Overview

15. Immunological Responses to Exercise and Training

16. Effects of Exercise on Gastrointestinal Function
   - Overview
   - Response to exercise and training


> Enrollment: 20 per year, Student credit hour (SCH): 60

9. Will there be an enrollment cap that restricts enrollment below the level of student demand? If so, what is the enrollment cap and why is it necessary?

> No

10. Will course be a “restricted enrollment” course? If so, why is restricted enrollment necessary?

> No

10. Describe how the success of the course will be evaluated? (“End-of-semester student evaluations” is not the answer to this question. How will the instructor determine if the learning outcomes are being met, and how will the department determine if the course is fulfilling its intended purpose?)

> How the instructor will determine if the learning outcomes are being met:

The success of this course will be evaluated periodically (every fourth week of instruction) using “Performance Assessment Questionnaires or PAQ’s). PAQ’s are a combination of self-assessment questions, course, textbook and instructor assessment questions, integrated with practical applications assignments whereby students apply their knowledge gains and assimilate collateral information to derive a solution, predict an outcome or develop a protocol to meet a pre-determined criteria.

Additionally, the instructor will use assessment tools based on Merrill’s “first principles” of instruction (Merrill, M.D., 2002, First principles of instruction. Educational Technology Research and Development, 50(3), 43-59.).
1. **Activation** - Students will be challenged to recall and demonstrate (through class discussions and writing assignments) prior knowledge and past learning or personal experiences to be applied to what should be newly learned.

2. **Problem centered authentic application** - Students will need to assimilate prior knowledge and past learning or personal experiences with new knowledge and will be asked to demonstrate (through class discussion, writing assignments, quizzes and exams) their level of understanding on relevant real-world tasks or problems, including a series of discussions or writing assignments that progress from explaining basic behavior diagnosing a complex behavioral abnormality.

3. **Demonstration** - greater learning is achieved and demonstrated when new knowledge is provided in the context of real-world issues. The knowledge is enhanced when it adheres to research-based principles of learning. Assigned research and writing experiences in this course satisfies this principle of instruction and allows the instructor to evaluate the depth of learning.

4. **Application** - Students learn more when they apply old and new knowledge and past learning or personal experiences to solve real-world issues and receive feedback and guidance during the application. Assigned research and writing experiences in conjunction with field trip activities will allow students to demonstrate the level at which the course learning outcomes are being met.

5. **Integration** - Students learn more when they are encouraged to integrate their new knowledge through reflection, discussion, debate, and/or presentation of new knowledge. Students in this course will be asked to regularly reflect on their own performance on quizzes, exams and writing assignments, discuss reading assignments and supplemental reading material and lecture material, debate the topics of discussion, and demonstrate their level of understanding by explaining timely topics during class or on experiential learning trips.

> **How the department will determine if the course is fulfilling its intended purpose:**

The department will use graduating student exit interviews, post-graduation alumni interviews, internship cooperaor interviews and evaluations, and advisory committee feedback to determine if this course is contributing to preparing students for careers in the the equine industry.

> **The instructor for this proposed course is not a member of the regular faculty. The instructor is qualified to teach this course based on education, 5 years of equine veterinary practice, 10 years horse husbandry experience and past teaching experiences. The instructor has taught this course previously. Please see attached Vita and letter of support.**
Level of Offering
12. Has the course been offered previously under 280/291 or 480/491? If so, when? Under what number? What was the enrollment? What level of students took the course?

> This course was offered previously as EQUUS 491 in Spring 2012 and 2013. The enrollment averaged 10 junior or senior students.

14. Justify the level of course offering.

> This course is being offered at the advanced junior or senior level. Comprehensive knowledge of anatomy, physiology, biochemistry and nutrition are required for complete immersion, understanding and application of the courses materials.

Relationship to other Courses, Curricula, and Departments
15. Does the course build on or interrelate with other courses in your curriculum or related curricula? If so, which ones?

> This course builds on and interrelates with other courses in the animal science and pre-veterinary curriculum. Specifically, the fundamental chemistry, biology, biochemistry, and statistics courses, ANSC265/266- Functional Anatomy of Dom Animals/Lab, ANSC320-Animal Nutrition, ANSC322-Principles of Animal Breeding & Genetics, EQUUS327- Equine Lameness, EQUUS347-Equine Form to Function, EQUUS423-Equine Nutrition, EQUUS430-Horse Management, EQUH256-Developing the Young Horse.

16. Do the topics in the proposed course duplicate or reiterate those in other courses in this or any other department? If so, how do the coverage and educational experience differ and how is this duplication or reiteration justified? Also, what liaison (which is expected in cases of apparent overlap) has been conducted with other departments? Report reactions, both favorable and unfavorable.

> The topics in this proposed course do not duplicate or reiterate those in other courses in this or any other department.

17. What programs (departments, colleges) will be impacted by the SCH production of this course? That is, where do you think the SCH in the proposed course are likely to come from? If the expected SCH production of the proposed course is greater than 1000, and the SCH are expected to come from other colleges, what steps have been taken to make the other units aware of the potential loss of SCH? Report reactions, both favorable and unfavorable.

> The animal science programs in the Department of Animal and Range Science (A&RS) in the College of Agriculture will be impacted by the SCH production of this course.

18. If the proposed course has a significant interdisciplinary component, please explain briefly. Otherwise, indicate n/a.

> N/A
Students Served

> Does the proposed course serve majors only? Non-majors only? Both majors and non-majors? What other majors might be interested in this course? State areas or disciplines to be served and indicate the specific efforts that will be made to make the course material relevant to all disciplines served.

> The proposed course would serve all three animal science major options (science, livestock and equine), pre-veterinary students and potentially biological science options.

Resources

> What additional resources (e.g., additional instructional IT, required technologies), if any, will be required to offer this course? Are there any resource issues for the students who will take the course (e.g., required technologies, travel, on-line access requirements)? Will there be an additional fee charged to students taking this course? Please explain.

> The instructional FTE for teaching this course has been permanently allocated. There are no additional resource requirements for the students who will take the course and no fee will be charged.

> What existing information resources - print (books, journals, documents), audiovisual (videos, DVDs, CDs or other), and/or electronic (e-books, databases, electronic journals and web sites) - provided by the MSU Libraries will be used by students in this course? Provide examples as well as descriptive information. If additional information resources are necessary, please discuss those acquisitions with the library (x5544 Collection Development) at least three months prior to the beginning of the semester in which this course will be taught.

> No existing information resources provided by the MSU Libraries will be used by students in this course. Supplemental resources are available from the instructor or on the World Wide Web.

Other Supporting Material

> Include any additional information you feel is needed to support this request.

> The Equine Science Program has been the fastest growing program in the Animal and Range Science Department since its inception in 2008. The curriculum has been upgraded to increase the rigor and substance to address the needs of a changing equine industry. The Provost allocated permanent funding for additional courses in the Equine Program based on the substantial growth and success. This course will be a required course in the newly re-organized and redeveloped Equine Option. The Equine Curriculum Committee, the Animal and Range Science Department Curriculum Committee, the Department Head and the College of Agriculture Dean support the changes and additional courses.