New 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):

Example: PHI 361 RN

Course Title: RBPF 140

Course Title: Heating Systems for Energy Auditors and Inspectors

Abbreviated Course Title (≤ 30 chars):

First Semester to be Offered:

Submitted by:

Submitter’s Contact Info: Phone, Email:

Instructor:

Department:

College:

Gallatin College

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.

APPROVALS

Submitter

Department Head

Chair, College Curriculum Comm.

Dean

Chair, Core Subcommittee (if app.)

Chair, CFC

Assoc. Provost
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.

   http://www.mus.edu/Qtools/CCN/ccn_default.asp
   - If a course exists with at least 70% 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 paperwork.
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):

   Course Title: RBPF 140 Heating Systems for Energy Auditors and Inspectors
   Credits: 2
   Department Offering Course: Workforce Programs
   College: Gallatin College

Is there an “equivalent” course in the MUS System?: □ Yes □ No

Learning Outcomes for the proposed new course:

Upon course completion, the student will:

• Identify the different domestic water and building heating/cooling energy transfer methods and heat transfer medium utilizing air, hydronics or steam and the associated terminal units appropriate for each method.
• Understand the different fuel sources available and utilized in heating/cooling equipment with current technology and the methods of heat transfer and/or heat transfer mediums commonly used for each fuel source
• Differentiate the pros/cons of heating/cooling systems depending on different variables such as building construction methods, fuel cost, maintenance cost, etc.
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.

Requested Rubric, Course Number, Core Designation (if needed):
- Course Title (for Catalog):
- Course Title (for Schedule of Classes, 30 characters, max.):
- First Semester to be Offered:
- Instructor's Banner ID (last 4 digits only):
- Department Offering Course:
- College:

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: __________
- Seminar: __________
- Independent Study: __________
- Lab/Studio: __________
- Recitation/Discussion: __________

TOTAL CREDITS: __________

Primary Mode of Delivery:
- Face-to-face
- Internet/Web-based
- Interactive Video
- Audio and/or Video Tape

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):
8:00-5:00

Assigned Building:
Montana Weatherization Training Center

Assigned Room:
Main lecture room

Capacity (room capacity, or enrollment “cap”):
25

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):
- RBPF 100

Co-Requisite(s):
N/A

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

This course covers basic guidelines for evaluating heating systems as an Energy Auditor. Low pressure boilers, forced air furnaces, and sealed combustion system analysis are the main focus of this course.
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.

This is part of a new program within Gallatin College and funding has been established.
New Undergraduate Course Narrative
Montana State University

Updated September 25, 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)

> RBPF 140

2. Course Title

> Heating Systems for Energy Auditors and Inspectors

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.

This is a required course for the Residential Building Performance Program. Upon course completion, the student will:

- Identify the different domestic water and building heating/cooling energy transfer methods and heat transfer medium utilizing air, hydronics or steam and the associated terminal units appropriate for each method.
- Understand the different fuel sources available and utilized in heating/cooling equipment with current technology and the methods of heat transfer and/or heat transfer mediums commonly used for each fuel source.
- Differentiate the pros/cons of heating/cooling systems depending on different variables such as building construction methods, fuel cost, maintenance cost, etc.

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

> Assignments, Tests, Quizzes, etc.

- Final Test--------------- 100 points
- Hands-On Skill Sets----- 100 points
- Quizzes------------------- 50 points
- Class Participation------ 150 points

Total: 350 points
5. 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 Outline:

- Why we work on heating systems – overview, filters
- Combustion basics – heat values, conversion, vents
- Heating system efficiency – combustion analyzer, efficiency calculations
- Introduction to heating system sizing – heat loss calculations, sizing calculations
- Venting systems – vent inspection, CAZ testing
- Distribution systems – heat rise, room pressure imbalance, pressure pan, duct blower, air handler flow meter
- Oil furnaces and boilers – system components, combustion analysis, barometric damper
- Gas furnaces and boilers – system components, combustion analysis, gas input rating, combustion air
- Other heat sources – space heaters
- Mobile home heating systems – system components, diagnostic tests
- Combustion appliance safety testing – gas leak detection, appliance visual inspection, combustion air calculation

6. List required texts or other required references.

  - Advanced Pressure Diagnostics, MSU Extension, Author, Jim Fitzgerald, 1994

7. What are the estimated enrollment and student credit hour (SCH) production?
   \[ \text{SCH} = (\text{enrollment} \times \text{credits}) \]

> Expected enrollment is 5 students. This is the first year of the program. Enrollment is low while the program becomes established.

8. 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?

> 20 Students

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

> Yes, the course will be restricted to Gallatin College students only.

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?)

> Attendance at all sessions is required. Students will be assessed by a post-test method and observation of participation in skill sets during lab sessions. The test will cover the specific topics in the objectives as the measurements of success. Students will need to score 70% or better on the written exam to pass the class.
11. Is the instructor a member of the regular faculty (i.e., tenured or tenure-track)? If no, please describe the instructor’s qualifications, attach a Vita, and provide a separate letter of support, signed by the department head (or appropriate unit director), addressing the instructor’s qualifications to teach this course.

> Yes, the instructor is a member of the regular faculty.

**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?

> No.

13. Justify the level of course offering.

> This is a one-year Certificate of Applied science. There will not be 200+ level courses offered.

**Relationship to other Courses, Curricula, and Departments**

14. Does this course build on or interrelate with other courses in your curriculum or related curricula? If so, which ones?

> This course builds on Single Family Energy Auditor. This course covers the same concepts, but, from the perspective of heating system analysis.

15. 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.

> No.

16. 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.

> None, this is a brand new program (launched Fall 2012)

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

> N/A.

**Students Served**

18. 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.

> Yes, the proposed course serves majors only.
Resources
19. What additional resources (e.g., additional instructional FTE, 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.

> None.

20. 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 (x6549 Collection Development) at least three months prior to the beginning of the semester in which this course will be taught.

> No additional library resources needed at this time.

Other Supporting Material
21. Include any additional information you feel is needed to support this request.

> N/A.
Heating Systems for Energy Auditors and Inspectors

Course Number, Title, and Credit:
RBPF 140, Heating Systems for Energy Auditors and Inspectors, 2 Credits

Instructors:
Mike Campbell  phone: 406-994-5178  email: mcampbell@montana.edu

Course Description:
Students will learn how to identify heating, ventilation and air conditioning applications found in single family homes.

Corequisites (for Certificate candidates only):
RBPF 100, 110

Office hours:
By Appointment

Required Materials:
Handouts will be provided

Course Learning Outcomes:
Upon Course Completion, the student will:
1. Identify the different domestic water and building heating/cooling energy transfer methods and heat transfer medium utilizing air, hydronics or steam and the associated terminal units appropriate for each method.
2. Understand the different fuel sources available and utilized in heating/cooling equipment with current technology and the methods of heat transfer and/or heat transfer mediums commonly used for each fuel source.
3. Differentiate the pros/cons of heating/cooling systems depending on different variables such as building construction methods, fuel cost, maintenance cost, etc.

Course Outline:
1. Why we work on heating systems – overview, filters
2. Combustion basics – heat values, conversion, vents
3. Heating system efficiency – combustion analyzer, efficiency calculations
4. Introduction to heating system sizing – heat loss calculations, sizing calculations
5. Venting systems – vent inspection, CAZ testing
6. Distribution systems – heat rise, room pressure imbalance, pressure pan, duct blower, air handler flow meter
7. Oil furnaces and boilers – system components, combustion analysis, barometric damper
8. Gas furnaces and boilers – system components, combustion analysis, gas input rating, combustion air
9. Other heat sources – space heaters
10. Mobile home heating systems – system components, diagnostic tests
11. Combustion appliance safety testing – gas leak detection, appliance visual inspection, combustion air calculation

Homework:
Homework may be assigned in the form of reading assignments and/or worksheets. Failure to do the reading assignments will affect a student’s ability to productively participate in class discussions and be reflected in their class participation assessment.

Evaluation Procedures:
Attendance at all sessions is required. Quizzes will be administered to assess whether students need review. The final evaluation will consist of a written exam and a hands-on problem solving lab session where the student must demonstrate knowledge of and apply the specific topics covered in lectures. Students will need to score 70% or better on the lab assessment to pass the class.
Assignments, Tests, Quizzes, etc.
Test------------------ 100 points
Quizzes--------------- 50 points
Class Participation----- 100 points
Total: 250 points

Grades
The grades will approximately follow the numerical scale above; the instructor(s) reserves the right to adjust the scale and class schedule as necessary. Should this become necessary, the class will be advised in a timely manner. Lab trainings will only be permitted when requested in advance.

Grading Standard
70% and above Pass
69% or less No Pass

Classroom Etiquette
1. Please turn OFF your cell phone; no one wants to listen to it even if it is on vibrate.
2. Attendance will be taken at the beginning of each class. Please be on time.
3. If you cannot attend class, it is your responsibility to contact the instructor(s).

Academic Standards:
Students are expected to maintain Scholastic Honesty. Scholastic Dishonesty includes, but is not limited to cheating on an exam, plagiarism, and collusion. For detailed policy statements and procedures dealing with Scholastic Dishonesty, see the MSU Catalog.

***Students with documented disabilities, whether physical, cognitive or psychological, are entitled to reasonable accommodations in their classes. If you would like to use accommodations for this class, please contact Brenda York, Director of Disability, Re-entry, and Veteran Services at 406-994-2824 (voice or relay) or by email at byork@montana.edu.