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): AGSC455

Course Title: Molecular Plant-Microbe & Insect Interactions
Abbreviated Course Title (≤ 30 chars): MPMI
First Semester to be Offered: Spring, 2014
Submitted by: Li Huang
Submitter's Contact Info: Phone, Email: 5058, lihuang@
Instructor: Li Huang
Department: PSPP
College: 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

APPROVALS

Submitter

Department Head

Chair, College Curriculum Comm.

Dean

Chair, Core Subcommittee (if app.)

Chair, CPC

Assoc. Provost

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.
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.

<table>
<thead>
<tr>
<th>Requested Rubric, Course Number, Core Designation (if needed):</th>
<th>Molecular Plant-Pathogen/Pest Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Title:</td>
<td>3</td>
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<tr>
<td>Credits:</td>
<td>PSPP</td>
</tr>
<tr>
<td>Department Offering Course:</td>
<td>Agriculture</td>
</tr>
<tr>
<td>College:</td>
<td></td>
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<tr>
<td>Is there an “equivalent” course in the MUS System?:</td>
<td>☑ Yes</td>
</tr>
<tr>
<td>Learning Outcomes for the proposed new course:</td>
<td>☐ No</td>
</tr>
</tbody>
</table>

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):
- Molecular Plant-Pathogen/Pest Interactions
- AGSC455/PSPP555

Course Title (for Catalog): Spring, 2014

First Semester to be Offered:
- 447

447

Instructor’s Banner ID (last 4 digits only):
- PSPP

College:
- Agriculture

Is the requested course number available? (x4155 to check):
- Yes

Frequency of course offering:
- Annually

Semester(s) offered (check all that apply):
- Summer

Summer Options (check all that apply):
- First 6 weeks

Credits by mode of instruction:
- Lecture: 3

TOTAL CREDITS: 3

Primary Mode of Delivery:
- Face-to-face

Time and Location – Call the Registrar’s Office at x4155 to find a time and location for the course.
- Assigned Day(s):
  - M

- Assigned Time(s):
  - TBA

- Assigned Building:
  - TBA

- Assigned Room:
  - TBA

- 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):
  - BIOB106

- Co-Requisite(s):
  - AGSC450

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

This course is to teach students the molecular mechanisms by which plants and pathogens/insects interact during the progress of pathogenesis or resistance, the understandings of how plants recognize relatively conserved microbial patterns to active defense.
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.
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)

> AGSC455

2. Course Title

> Plant-Pathogen/Pest Interactions

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.

> Objectives of this course are to teach students the molecular mechanisms by which plants and pathogens/insects interact during the progress of pathogenesis or resistance, the understandings of how plants recognize relatively conserved microbial patterns to active defense, the methods to study and visualize intracellular interactions during pathogenesis and defense. Current information and hypotheses using different host/pathogen or host/pathogen or pest interactions as examples will be presented. Areas covered will be the physiology, biochemistry, molecular biology, and molecular genetics of these interactions.

Topics will include:

- Gene discovery
- Genome analysis
- Intra-cellular interactions with high-throughput imaging technology
- Mechanistic understanding of cellular and molecular processes to translational activities.

Students will learn the latest insights into the mechanisms of the recognition of molecular patterns by plant cell surface transmembrane receptor kinases activates the first line of defense and how pathogen effectors suppress host defenses, an understanding of current views of the mechanisms of plant R proteins. Lectures will be followed by student-led discussions of the experimental approaches used or proposed to advance the hypotheses and contribute to an overall understanding of interactions at the molecular level.
4. Based on what types of student work (e.g., tests, homework assignments, papers, performances, etc.) will grades be determined?

> Student grades will be determined based on three tests and homework assignments.

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.

> Details are provided as an attachment

6. List required texts or other required references.

> No texts are available yet, journal articles will be the resources of information.

7. What are the estimated enrollment and student credit hour (SCH) production? [SCH = (enrollment * credits)]

> SCH=15x3=45, Estimated enrollment is 15 and credit hour is 3

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?

> There will not be an enrollment cap foresaw, but if so, 25 students are the enrollment cap.

9. 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?)

> After successfully completing this course, students will be about to

1. Define concepts of Molecular Plant-Microbe & Insect Interactions;
2. Describe the mechanisms that plants use to recognize pathogens and pests, and active defense;
3. Describe the cellular and molecular processes to translational activities upon interactions;
4. Describe the methods to study and visualize intracellular interactions during interactions;
5. Discuss experimental approaches used and propose a new hypothesis to advance an overall understanding of interactions at the molecular level.

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
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.

> The topics covered in this course will be complementary to undergraduate students who are taking upper-level courses including Plant Disease Control and Plant Breeding and graduate students who are interested in plant resistance breeding.

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 will be complementary course to AGSC450 (Plant Disease Control), PSPP551/552 (Plant Fungal Diseases), PSPP524 (Advanced Plant Pathology), AGSC441 (Plant Breeding and Genetics Breeding), and PSPP542 (Genetics of Plant Improvement).

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.

> The enrollments will mainly come from College of Agriculture, including PSPP, Agricultural Education and Land Resources & Environmental Sciences.

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.

> Both majors and non-majors
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.

> There is no additional resource required

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.

> Journal articles will be the resources of information

Other Supporting Material

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

>
AGSC455: Molecular Plant-Pathogen & Pest Interactions (Spring 2014)

Instructor: Li Huang
Tel: 994-5058, email: lhuang@montana.edu

Grading:
- Three one-hour exams: 30 X 3 = 90 points
- Homework assignments: 15 points

Total: 105 points

A: 96-100, A`: 90-95, B+: 87-89, B: 84-86, B`: 80-83,
C+: 75-79, C: 65-74, C`: 60-64, D: 50-59.

SPECIAL NEEDS INFORMATION:
Students with special needs or requiring special accommodations should contact the instructor and the Disabled Student Services Office at the earliest opportunity.

STUDENT CONDUCT:
Montana State University expects all students to conduct themselves as honest, responsible and law-abiding members of the academic community and to respect the rights of other students, members of the faculty and staff and the public to use, enjoy and participate in the University programs and facilities. For additional information reference, see: www2.montana.edu/policy/student_conduct/student_conduct-code_2008-2009.htm

COLLABORATION:
University policy states that, unless otherwise specified, students may not collaborate on graded material. Any exceptions to this policy will be stated explicitly for individual assignments. If you have any questions about the limits of collaboration, you are expected to ask for clarification.

ACADEMIC MISCONDUCT:
Section 420 of the Student Conduct Code describes academic misconduct as including but not limited to plagiarism, cheating, multiple submissions, or facilitating others’ misconduct. Possible sanctions for academic misconduct range from an oral reprimand to expulsion from the university.
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<tr>
<th>Date</th>
<th>Lecture Topic</th>
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<tr>
<td>Jan</td>
<td>Lec. 1: Overview of course, definitions, concepts, research tools</td>
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<td>Lec. 2: Pre-penetration, penetration and cell wall degradation</td>
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<td>Lec. 3: Virulence effectors</td>
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<td>Lec. 4: Virulence effector protein functions</td>
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<td>Lec. 5: Pathogen secretion systems</td>
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<td>Lec. 6: PAMPs and PAMP-triggered immunity</td>
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<td>Lec. 7: Effector-triggered immunity and introduction to R genes</td>
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<td>Feb</td>
<td>Lec. 8: NBS-LRR gene products, and functional domains</td>
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<td>4</td>
<td>Paper Discussion and review</td>
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<td>Lec. 9: R gene mediated signaling pathways</td>
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<td>Lec. 10: Cellular responses in disease resistance: Autophagy pathway</td>
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<td>Lec. 11: Cellular responses in disease resistance: Endocytic pathway</td>
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<td>Lec. 12: Defense responses: Elicitors, HR, phytoalexins, PR proteins</td>
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<td>Lec. 13: Systemic resistance: SAR and ISR</td>
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<td>Lec. 15: Plant-Bacteria Interactions</td>
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<td>Lec. 16: Plant-Fungus Interactions</td>
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<td>Lec. 17: Fungal Genetics</td>
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<td>Lec. 18: Plant-Virus Interactions</td>
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<td>1</td>
<td>Lec. 19: Virus intercellular transport</td>
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<td>Lec. 20: Viruses and gene silencing and disease</td>
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<td>Lec. 21: Virus suppression of RNA silencing</td>
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<td>Lec. 22: Plant-Insect Interactions</td>
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<td>Lec. 24: Plant-Insect Interactions</td>
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<td>22</td>
<td>Paper Discussion and final review</td>
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<td>24</td>
<td>Final exam</td>
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<td>28</td>
<td>Final exam</td>
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