Proposal Form For Addition And Revision Of Courses

1. Proposing College / School: Agriculture
   Department: Entomology

2. Course Prefix and Number: ENTN 5363/6366  
   3. Effective Term: Spring 2013

4. Course Title: Landscape Entomology
   Abbreviated Title (30 characters or less): Landscape Entomology

5. Requested Action:
   - [ ] Renumber a Course
   - [ ] Add a Course
   - [ ] Revise a Course

6. Course Credit:
<table>
<thead>
<tr>
<th>Contact/Group Hours</th>
<th>Scheduled Type</th>
<th>Weekly or Per Term?</th>
<th>Credit Hours</th>
<th>Anticipated Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.00</td>
<td>Lecture - Distance Ed</td>
<td>Weekly 3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>2.0</td>
<td>Lab - Distance Ed</td>
<td>Weekly 1</td>
<td>20</td>
</tr>
</tbody>
</table>
   Total Credit Hours: 4

7. Grading Type:
   - [ ] Regular (ABCDF)
   - [ ] Satisfactory/Unsatisfactory (S/U)
   - [ ] Audit

8. Prerequisites/Corequisites:
   Use "P:" to indicate a prerequisite, "C:" to indicate a corequisite, and "P/C:" to indicate a prerequisite with concurrency.
   BIOL 1030 or BIOL 1037"P"; departmental approval

9. Restrictions: List specific restriction in space above.
   - [ ] College
   - [ ] Major
   - [ ] Standing
   - [ ] Degree

10. Course Description:
    Identification and management of arthropod pests in the landscape. Recognition of pests and damage to trees, turf and ornamental plants.

11. May Count Either: [ ] or [ ]
    (Indicate if this particular course cannot be counted for credit in addition to another)

12. Affected Program(s):
    (Respond "N/A" if not included in any program; attach memorandum if more space is required)

<table>
<thead>
<tr>
<th>Program Type</th>
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<tbody>
<tr>
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<td>Elective</td>
</tr>
<tr>
<td>Major</td>
<td>Entomology</td>
<td>Elective</td>
</tr>
</tbody>
</table>

13. Overlapping or Duplication of Other Units' Offerings:
    (If course is included in any other degree program, is used as an elective frequently by other unit(s), or is in an area similar to that covered by another college/school, attach correspondence with relevant unit)
    - [ ] Applicable
    - [ ] Not Applicable
14. Justification: This course is another elective course in our graduate ENTM degree program. Recent loss of faculty expertise has greatly reduced the available electives in our graduate-only department. The program and this course will be delivered exclusively using distance education delivery methods. An online version of ENTM 5363/6366 is needed to expand the general program in Entomology teaching online. Additionally, this class will provide educational opportunities for non-traditional students.

(Include a concise, yet adequate rationale for the addition/revision of the course, citing accreditation, assessments (faculty, graduate, and/or external) where applicable)

15. Resources: The primary resource for the online version of this course will be the course website on Canvas. Powerpoints, narrated lectures, video demonstrations, and other digital/web resources will be provided.

(Indicate whether existing resources such as library materials, classroom/laboratory space, and faculty appointments are adequate to support the proposed addition/revision; if additional resources are required, indicate how such needs will be met, referencing the appropriate level of authorization -- i.e.: Dean -- where necessary; if no additional resources or shifting of resources will be necessary, respond "Not Applicable")

16. Student Learning Outcomes: This course will
1. introduce students to principles of landscape entomology, pest management in the urban landscape, and related concepts in insect-plant relationships.
2. familiarize students with identification of pests to order.
3. discuss identification of pests and plant symptoms of pest attack, sampling, biological and cultural control, host plant and insecticide resistance, and integrated pest management.

(State in measurable terms (reflective of course level) what students should be able to do when they have completed this course)

17. Course Content Outline: See syllabus and weekly breakdown for lectures and labs

(Provide a comprehensive, week-by-week breakdown of course content, including assignment due dates)

18. Assignments / Projects: The semester points are distributed as follows: 39% for lecture assessments, 25% lecture assessments, and 36% semester projects. Most (app. 70%) of the points in lab and lecture assessments are in exams. All exams will be proctored according to DE guidelines. There will be weekly quizzes in both lecture and lab accounting for about 14% of the semester point total. Quizzes are automatically generated from a quiz bank in Respondus and taken through the Canvas webpage for the class. Students must login to the Canvas webpage and enter the discussion of research and review papers. The balance of points in lecture (65 points) are allocated to a subjective evaluation of student participation in the weekly paper discussions. There are three semester projects: insect collection, phenology project, and communication components account for app. 14%, 7%, and 14% of the semester points. Insects will be collected and identified independently. Kits are available for purchase through the Entomology Club. Kits will then be shipped to the student. Semester project deadlines are clearly stated on the lab and lecture schedules.

(List all quizzes, projects, reports, activities and other components of the course grade -- including a brief description of each assignment that clarifies its contribution to the course's learning objectives)

19. Rubric and Grading Scale:

<table>
<thead>
<tr>
<th>Source</th>
<th>Point values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture exams (2)</td>
<td>250 (125x2)</td>
</tr>
<tr>
<td>Final exam</td>
<td>125</td>
</tr>
<tr>
<td>Lecture Quizzes (10)</td>
<td>100</td>
</tr>
<tr>
<td>Student participation/contribution to paper discussions</td>
<td>65</td>
</tr>
</tbody>
</table>
Communication Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>100</td>
</tr>
<tr>
<td>Presentation</td>
<td>60</td>
</tr>
<tr>
<td>Student Assessment (presentation)</td>
<td>50</td>
</tr>
<tr>
<td>Semester projects</td>
<td></td>
</tr>
<tr>
<td>Phenology Project</td>
<td>100</td>
</tr>
<tr>
<td>Insect Collection</td>
<td>200/240</td>
</tr>
<tr>
<td>Lab assessments</td>
<td></td>
</tr>
<tr>
<td>Exams (2)</td>
<td>250 (125×2)</td>
</tr>
<tr>
<td>Quiz total</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>1390</td>
</tr>
</tbody>
</table>

Grading System: 90-100% A
80-89 B
70-79 C
60-69 D
Below 60 F

(List all components of the course grade — including attendance and/or participation if relevant — with point totals for each; indicate point totals and ranges or percentages for grading scale; for S/U grading, detail performance expectations for a passing grade)

20. Justification for Graduate Credit:

This is an advanced course in Entomology. It is structured as a master's level course and is a common course in graduate programs in Entomology. It is currently part of the graduate program at Auburn University. Students enrolled in ENTM 6366 will have three additional class requirements. First, graduate students must lead a paper discussion session during the semester. Second, students in 6366 must have at least one pest event in their phenology sequence (Phenology class Project). This will generally be the first detection of a pest species (e.g., azalea lace bug) through trapping or direct observation. This will require additional sampling and traps, nets, and other sampling equipment will be made available for this. The final requirement for 6366 students is the addition of 10 additional specimens (40 total) in their insect collection. The overall point value for the collection will be 240 points for ENTM 6366 students.

(Include a brief statement explaining how the course meets graduate educational standards (i.e.: rigorous standards for evaluation, development of critical thinking and analytical skills, etc.))

(Included below are standard statements regarding course policies. If necessary, a statement may be altered to reflect the academic policies of individual faculty members and/or the academic unit or department, provided that there is no conflict with the Tiger Cub, Faculty Handbook, or any existing university policy.)

**POLICY STATEMENTS**

**Attendance:** Although attendance is not required, students are expected to attend all classes, and will be held responsible for any content covered in the event of an absence.

**Excused Absences:** Students are granted excused absences from class for the following reasons: illness of the student or serious illness of a member of the student's immediate family, the death of a member of the student's immediate family, trips for student organizations sponsored by an academic unit, trips for university classes, trips for participation in intercollegiate athletic events, subpoena for a court appearance, and religious holidays. Students who wish to have an excused absence from class for any other reason must contact the instructor in advance of the absence to request permission. The instructor will weigh the merits of the request, and render a decision. When feasible, the student must notify the instructor prior to the occurrence of any excused absences, but in no case shall such notification occur more than one week after the absence. Appropriate documentation for all excused absences is required. Please see the Tiger Cub for more information on excused absences.

**Make-Up Policy:** Arrangement to make up a missed major examination (e.g., hour exams, mid-term exams) due to properly authorized excused absences must be initiated by the student within one week of the end of the period of the excused absence(s). Except in unusual circumstances, such as the continued absence of the student or the advent of university holidays, a make-up exam will take place within two weeks of the date that the student initiates arrangements for it. Except in extraordinary circumstances, no make-up exam will be arranged during the last three days before the final exam period begins.

**Academic Honesty Policy:** All portions of the Auburn University student academic honesty code (Title XII) found in the Tiger Cub will apply to university courses. All academic honesty violations or alleged violations of the SGA Code of Laws will be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee.
Disability Accommodations: Students who need special accommodations in class, as provided for by the Americans With Disabilities Act, should arrange for a confidential meeting with the instructor during office hours in the first week of classes (or as soon as possible if accommodations are needed immediately). The student must bring a copy of their Accommodation Letter and an Instructor Verification Form to the meeting. If the student does not have these forms, they should make an appointment with the Program for Students with Disabilities, 1286 Haley Center, 844-2098 (V/TT).
Supplemental Information For Addition Of Distance Education (DE) Course

1. Proposing College / School: Agriculture
   Department: Entomology

2. Course Prefix and Number: ENTM 5363/6366

3. Effective Term: Spring 2013

4. Course Title: Landscape Entomology
   Abbreviated Title (30 characters or less): Landscape Entomology

5. On-Campus Pre/Corequisites:
   (Indicate any applicable pre/corequisites for the on-campus version of the course. Use the space provided below to indicate how they will be adjusted to accommodate DE students.)
   Prerequisite(s): BIOL 1030 or BIOL 1037
   Corequisite(s): 
   Pre/Corequisite(s):
   DE Adjustment: Departmental Approval

6. Affected Program(s):
   (Respond "N/A" if not included in any program; attach memorandum if more space is required)
   (e.g.: minor, major, etc.) (e.g.: MS in Chemistry, Performance Option, Minor in Art) (required or optional?)

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</table>

7. Justification for DE Delivery:

   This course is another elective course in our graduate ENTM degree program. Recent loss of faculty expertise has greatly reduced the available electives in our graduate-only department. The program and this course will be delivered exclusively using distance education delivery methods. An online version of ENTM 5363/6366 is needed to expand the general program in Entomology teaching online. Additionally, this class will provide educational opportunities for non-traditional students.

   (include a concise, yet adequate rationale for the addition of a distance education version of the course in question (e.g.: accreditation, as part of a proposed distance education program, expansion of opportunity for working professionals/students, etc.)

8. Access to Resources:

   The primary resource for the online version of this course will be the course website on Canvas. Powerpoints, narrated lectures, video demonstrations, and other digital/web resources will be provided. A list of online insect identification keys have been included in the syllabus to aid identification of specimens in the insect collections.
(Indicate how distance education students will be given access to all necessary academic resources, such as library materials, laboratory facilities, and learning centers.)

9. Course Content Delivery:

Students will view the scheduled lectures and complete lecture handouts (outline). The Laboratory portion of the course will consist of XX insect collections. Insects will be collected and shipped via a kit that will be able to be purchased from the Department. A digital picture can also be taken if the students provide a special identifying marker that indicates that the picture was taken by the student.

(Outline, in specific detail, what adjustments will be made to the existing course in order to accommodate learning via distance education. Include delivery of lecture material, discussion sessions, and submission of assignments/papers, as applicable.)

10. Course Interaction:

Students will interact with the content, the teacher, and their classmates on a weekly discussion through the Canvas webpage for the class. The course discussion is the Canvas also allows for students to meet each other and instructor in a synchronous or through the login record in Canvas.

(Approve specific information regarding the adjustments that will be made to the course, in order to accommodate interaction between the student and instructor and peers via distance education. Include such aspects as office hours, class participation, and -- if applicable -- any time that the student would be required to be on-campus.)

Approvals

[Signatures]

Department Chair/Head

Date

College/School Curriculum Committee

Date

College/School Dean

Date

Dean of the Graduate School (for Graduate Courses)

Date

Assoc. Provost for Undergraduate Studies (for Undergraduate Courses)

Date

Contact Person: 

Telephone: 

E-Mail Address: 

Fax: 
ENTM 5363/6366
Landscape Entomology
Credits - 4

Course Syllabus

Instructor: Dr. David W. Held
Assistant Professor of Entomology
Office location: 327 Funchess Hall
Mailing address:
301 Funchess Hall
Department of Entomology and Plant Pathology
Auburn University, Auburn AL 36849
Tel. 844-3818 (office); 844-7959 (lab) email: david.held@auburn.edu

Conferences with the Instructor: Conferences may be arranged to suit your schedule by speaking with me before or after class, or by telephone or email.

Virtual Office Hours are TR (7:30-10:30 am) using Chat, Skype, or Web Conferencing, phone or by appointment.

Course Description: Identification and management of arthropod pests in the landscape. Recognition of pests and damage to trees, turf and ornamental plants.

Course Objectives: This course will introduce students to principles of landscape entomology, pest management in the urban landscape, and related concepts in insect-plant relationships. All students should be familiar with identification of pests to order. We will discuss identification of pests and plant symptoms of pest attack, sampling, biological and cultural control, host plant and insecticide resistance, and integrated pest management.

Prerequisites: Individuals must have had an introductory course in biology (BIOL 1020, 1030 or equivalent) or have pre-approval of the instructor. It is preferred for students enrolling in this course to have completed General Entomology (ENTM 3040), Economic Entomology (ENTM 4020), or Entomology for Educators (ENTM 5010).

Examinations and Grading
Letter grades in this course will be determined using the following breakdown of grades:

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<tr>
<td>Source</td>
<td>Point values</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Communication Components</td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td>100</td>
</tr>
<tr>
<td>Presentation</td>
<td>50</td>
</tr>
<tr>
<td>Student Assessment (presentation)</td>
<td>50</td>
</tr>
<tr>
<td>Semester projects</td>
<td></td>
</tr>
<tr>
<td>Phenology Project</td>
<td>100</td>
</tr>
<tr>
<td>Insect Collection</td>
<td>200</td>
</tr>
<tr>
<td>Lab assessments</td>
<td></td>
</tr>
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<td>Exams (2)</td>
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Grading System:  
90-100%  A  
80-89    B  
70-79    C  
60-69    D  
Below 60 F

**Exams:**
Two regular exams and a final exam and several online quizzes will be given. During the first week of the class, you must select a proctor to supervise the exams. Examples of approved proctors are academic administrators in the learner’s locale: school superintendents or principals, academic deans or department heads at colleges, or an independent learning office test supervisor at another college, or an education officer at a military installation. All proposed proctors are verified for appropriateness. If you are on-campus at Auburn, you may use the Distance Learning Testing Center staff at 334-844-3106 or audl@auburn.edu. If you do not take the exams at Auburn, the forms for proctoring are available on the homepage of this course or at: http://www.ag.auburn.edu/students/distanceeducation/

**Section Quizzes**
When students complete each of the 13 sections, they must complete the quiz for that section. The objectives of these quizzes are to reiterate the important points from each section and to foster on-going processing of the information. These quizzes will be short and long answer questions depending on the nature of the material that was covered. Quizzes are will be made available in sequential order via Canvas. This means students must complete the quiz with a minimal grade before you will be allowed to advance to the next quiz. The lowest 3 quiz grades will be dropped before calculation of the final grade.

**Required Readings**
This course will require weekly readings. These are intended to expand the topic of discussion with empirical or review papers. Links to these readings will be placed in the online lecture schedule in Canvas. Book chapters, when assigned, will be scanned and placed on digital reserves. Each week students are required to participate in the discussion of these papers in
Canvas. Participation and contribution to these online discussions will be formally assessed (65 total points) by the instructor. Students enrolled in EN TM 6366 will be required to lead one of the paper discussion sessions by posting discussion questions relative to the readings.

**Lab assignments**

Students will view narrated presentations for each weekly lab period. The objectives of the lab are to learn to identify key insects to order, family, and some to species. Labs are constructed to cover a new taxonomic group each week. When students complete each lab, they must complete the quiz for that lab. The objectives of these quizzes are to reiterate the important points from each lab and to foster on-going processing of the information. These quizzes will be identification of insects to order or family, or identification of taxonomic features characteristic of an order, family, or group. Quizzes are will be made available in sequential order via Canvas. This means students must complete the quiz with a minimal grade before you will be allowed to advance to the next quiz. The lowest 2 quiz grades will be dropped before calculation of the final grade.

**Insect Collection**

The purpose of the insect collection is for students to observe, collect, and identify pest (and beneficial) insects and their associated damage. This part of the course forces students to directly observe pests or damage in situ. This is one of the most important parts of the learning experience for this class. The details of how to prepare and submit the insect collection and the collection grading scale are presented in a separate handout.

**Communication Components**

Students are required to do a written and oral presentation on a research topic relative to Landscape Entomology. This will prepare students to research and synthesize research into a paper and a presentation.

**Writing Component**

**Step 1: Select a topic of interest to you in Landscape Entomology.** Some examples would be: Host plant resistance for a particular insect, insect predators, gall makers, insecticide resistance, insecticide toxicology, visual cues and pest management, colony collapse disorder, or the biology and management for a particular pest (scale insects, mole crickets, white grubs, etc). Once you select your topic, email your choice to the instructor for approval. This is to ensure that your topic isn’t too narrow or too broad.

**Step 2: Do a literature search on your topic.** This should be done using one of the many scientific search engines available through the library’s webpage. Web of Science is an excellent choice. Google Scholar is good but may miss some articles that are “hit” by other search engines. **Assemble at least 10 citations** for research articles into a Word document and email it to the instructor. **Literature search results are due within the first 30 days of class.**

**Step 3: Get the full articles online or through Aubie Express.** To get article remotely, access the library services page (http://www.lib.auburn.edu/services/#!ill_aubieTabs) or through the Library link on auburn.edu, the select Services. On this page, click the tab “Interlibrary
Loan\AubieExpress”. At this point you will be asked to login with your Auburn global ID and password. Then complete the required fields and click Submit at the bottom of the page. The AubieExpress Staff will email the article or a link to the Interlibrary loan webpage for you to retrieve the citation once it is available (usually 48 h).

Once you have the article, read and summarize the key findings or outcomes of each research paper.

**Step 4. Construct a review article on the subject in MSWord or other word processing program.** This article should be at least 12 point font, double spaced, and between 1000 to 2000 words not including references. The body of the text should be constructed using the following headings:

**Introduction**

State the background information on the topic in one or more paragraphs. For example, the order, family, genus, and species of the insect, the history of the phenomenon (colony collapse disorder), or the importance of the system. Much of this introduction will come from the introductions of the research papers that you select.

**Current Research**

Here you are to include the summaries of the various research studies from your literature review. **This section should summarize at least 5 research papers on your topic.** You may choose extension publications since they often contain background information but they do not count as part of the 5 sources. **You must have 5 sources that are research papers. Additional papers are allowed as long as you have summarize and review 5 research papers.** You may choose to subdivide this section. For example, if writing on the biology and management of white grubs, you could have subsections on biological control, cultural and chemical controls. Grouping topics will also make your review more interesting. Use the examples article on Japanese beetles as an example of writing format. Use in text citation after the sentence where that information appears. In text citations are in parentheses and include only the authors last names and the year (e.g., Held 2011, Miller and Held 2011). If there are more than 2 then use et al. after the first author (Held et al. 2011).

**General Conclusion**

Use this section to draw some final conclusions based on your review. These conclusions are often broader statements that have been supported by the information discussed in the Current Research section.

**References Cited**

Your research articles and other references should be listed at the end of the review using the following style.

List the references in alphabetical order (chronological for one author or more than two authors, and alphabetical order [by surname of second author] for two authors)

**Evans, M. A. 2000.** Article title: subtitle (begin with lowercase after colon or dash unless first word is a proper noun). J. Abbr. volume: start page–end page.

**Evans, M. A., and R. Burns. 2001.** Title. J. Abbr. 00: 000–000.

**Evans, M. A., A Tyler, and H. H. Munro. 2000.** Title. J. Abbr. 00: 000–000.
The final report should be submitted no later than 30 days before the last class date.

**Grading Criteria for the Writing Assignment**

*Review: 100 points*

- 60% on the Current Research section
- 20% each for Introduction and Conclusion
- 10% Format and Style
- 10% Minimum of 5 research articles correctly formatted.

*These reviews should be the independent work of each student. Copying and pasting part or all of another person's (fellow student or online sources) work will result in NO CREDIT.* The instructor reserves the right to use plagiarism software or commercial plagiarism detection services (i.e., articlechecker.com or checkforplagiarism.net) to compare your work to other students and to online sources.

**Communication Components**

*Presentation Component*

Each student should make a slide presentation to compliment the research review. The presentation follows the same format as the paper (introduction, current research, conclusions). The presentation must have voice over by the student delivering the presentation not just slide with words and images. It is important to use this format to show the viewers what may not be relayed adequately on paper. For example, if you are doing Biology and Management of White Grubs, you should show images or video of grub damage, white grub life cycle diagrams, etc. Each photo used should be source on the slide (website or source listed). Use of adequate graphics and format account for 50% of the point total for the presentation-evaluation by the instructor. The other 50% will come from evaluations of your presentation submitted by other students. Each student will rate all the other students presentations in *three areas*: content/format, delivery, and effective use of media. Those overall scores from students will be averaged and added to the score for the presentation component.

**Phenology Project**

In my experience, understanding the seasonal occurrence (phenology) of pests is key to effective identification and management. The objective of this project is to require students to note the phenology of plants and pests in the landscape.

Each student will generate a sequence of 15 phenological events (like a phenology calendar) that spans at least 30 d during the semester when the course is taken. The observation dates can cross a calendar month as long as you have at least 15 phenological events spanning a 30 d period. Plant phenophases (events) can be first bloom, 50%, bloom, 95% bloom, bud break, leaf expansion, etc. You can use first bloom, 50% bloom, and 95% bloom for the same plant but only one specimen for that species. For example, you could record three events for Bradford pear on campus but not another Bradford pear somewhere else in town.

Pest emergence or first detection can also be included. **Students in 6360 must have at least one pest event in this sequence and 5 additional observations (20 total).** For example, first immature azalea lace bug, crawler hatch of Florida wax scale, or first flight of
Japanese beetles. You will have to produce a written record of your observations in the order in which they occurred in the landscape. The listing should include the plant (and pest) identification, location of the plants, date of the event and the phenophase that was recorded. A spreadsheet (available on class webpage) has been created to record this information. Traps are available to all students by request from the instructor. Requests should be made via email to the instructor within the first week of class. It must include your complete postal address. The traps will be then be mailed to you.

Basic Course Policies: Course lectures will be voiceover slide presentations. There will be a lecture outline available to take notes when viewing the lectures that will contain the main topics to be covered during that lecture period. Keep outlines and use as a guide for studying.

Class Attendance. Attendance is generally correlated with class performance. Attendance is not required but is highly encouraged. Class attendance will be monitored/tracked via login and access to Canvas. Class login/participation is essential to the success of this course.

The instructor intends to follow the rules regarding “Faculty Responsibilities in the Instructional Program” and “Policy on Classroom Behavior” outlined in the Tiger Cub Online Handbook (http://www.auburn.edu/tigercub/handbook.html). Please don’t cheat or plagiarize. Collections, exams, and writing assignments should represent your own work.

Attendance Policy
1. Students are expected to review all lectures and learning modules
2. Failure to complete assignments or to take exams at designated times without an acceptable excuse will result in a zero for that assignment or exam.
3. Illness may be discussed with the instructor and prior permission received. Excuses for the following reasons should be discussed prior to submission:
   a. Illness of the student or serious illness of a member of the student’s immediate family.
   b. Death of a member of the student’s immediate family.
   c. Subpoena for court appearance.
   d. Participation in intercollegiate athletic events (verified by letter from professor, Dean or Athletic Department official)
   e. Religious holidays
   f. Other reasons the instructor deems appropriate, e.g. job interview

Equipment and Technical Skills:
The following are necessary for this course:
   1. A computer with an Internet connection (high speed Internet is recommended)
   2. Knowledge of basic computer skills and experience using email and the internet

Class Parameters, Resources and Limitations:
You are expected to stay on track, especially since the examinations will be focused on each unit’s topics. The distance learning environment requires a student to be self-directed in their learning; for instance, there is freedom in determining at what time of day and where you do your
coursework. It does, however, entail quite a bit of self-discipline and determination in order to keep up with the assignments. There are grade penalties for late work.

**Methods students will use to interact with the professor:**
The students will watch and listen to recorded lectures by professor and guest lecturers. They will be able to communicate with the instructor and teaching assistant via email and telephone during specified virtual hours.

**Textbooks:**
*Required: There is no required text.* But there will be several required readings as part of the course. Most, if not all, will be posted on Canvas or links to online publications will be provided.

I strongly recommend *Garden Insects of North America* by Whitney Cranshaw (Princeton University Press, 2004). This book is a TERRIFIC value (about $25) and covers turf, landscape, and garden pests, with hundreds of color photos. It is available on-line through Amazon.com. You likely will refer to this book throughout your career.

**General References** (may be useful for IDs for your collection):

**Books**

a. Insects that Feed on Trees and Shrubs, by W. T. Johnson and H. H. Lyon.
b. Turfgrass Insects of the United States and Canada, by H. Tashiro.
c. Destructive Turfgrass Insects: Biology, Diagnosis, and Control, by D. A. Potter

e. BugGuide.net (http://bugguide.net/node/view/15740)
f. Whitefly key (http://www.entomology.umn.edu/cues/inter/inmine/Whitefb.html)
g. Ladybug key (http://www.easternladybeetles.com/)
i. Billbug key (http://digitallibrary.amnh.org/dspace/handle/2246/974)
j. Lace bug key (http://entnemdept.ufl.edu/choate/tingidae.pdf)
k. Florida Hemiptera (http://entnemdept.ufl.edu/choate/Florida_hemiptera1.pdf)
m. Aphids of the Midwest Key (http://ctap.inhs.uiuc.edu/lagos/key.asp?key=Aphis&lng=En&i=1&keyN=1)

**Online, free resources**

o. Mite gall makers (http://www.entomology.umn.edu/cues/Web/122EriophyidMites.pdf)
q. Scale insects on ornamental plants-TX (https://agrilifebookstore.org/publications_details.cfm?whichpublication=259)
r. Gall-making insects and mites-TX (http://insects.tamu.edu/extension/publications/epubs/e-397.cfm)
ENTM 6363 requirements:
Students enrolled in ENTM 6363 will have three additional class requirements. Students enrolled in ENTM 6366 will have three additional class requirements. First, graduate students must lead one paper discussion session during the semester. Second, students in 6366 must have at least one pest event in their phenology sequence (Phenology class Project). This will generally be first detection of a pest species (e.g., azalea lace bug) through trapping or direct observation. This will require additional sampling and traps, nets, and other sampling equipment will be made available for this. The final requirement for 6366 students is the addition of 10 additional specimens (40 total) in their insect collection. The overall point value for the collection will be 240 points for ENTM 6366 students.
Insect Collection
Purpose and Requirements

Purpose: To have students observe, collect, and identify a pest group and their associated damage.

Your Task: Each student will collect and identify specimens to Order, Family, and common name. Examples of insect damage also are allowed where indicated. Each specimen (including extras) should be listed on the collection inventory, which is a typed document that must accompany your collection when completed. The inventory should contain the following information:

a. Insect I.D. number
b. Date collected and collector's name
c. Taxonomy: Order: Family, common name
d. Collection information: Habitat collected from - be specific, for example: "under sod", "on foliage of red bay tree", "under bark of dogwood tree" and Locality (city, state)
e. Damage - briefly describe, including which life stages are involved or damaging
f. Monitoring method
g. Control recommendation and SOURCE OF CONTROL INFORMATION

#1

Taxonomy: Lepidoptera: Noctuidae, Fall Armyworm adult

Collection information: Collected 9/22/10
Collector: Gene Chizik
Bermudagrass on football field,
Auburn, AL

Damage: larvae chew foliage, creating ratty-looking field

Monitoring method: Adult flight using wing traps baited with sex pheromones

Control: Apply a pyrethroid insecticide such as bifenthrin to turf. Without irrigation for 24 h after application. (Alabama turfgrass recommendations www.aces.edu)
Each specimen must be properly labeled but pinning isn’t required. Specimens, however, must be properly preserved (soft bodied insects in ethylene glycol, etc) for full credit. **Collections should represent your own work.**

**Ecological or Damage categories (30 total specimens):**

- **Mite pest**
  One Plant feeding (i.e., spider mites or gall mites) only
- **Borers from tree or shrub:**
  Two insects (larva, pupa, or adults) that represent two separate insect orders.
- **Lace bugs:**
  Two different species (You can collect other species, ID the males and females for extra points)
- **Gall makers**
  Two different species representing two different orders (Submit galled leaves or stems, gall makers count as extras)
- **Leafminers**
  Two different species of leafminers (Submit mined leaves)
- **Defoliators (caterpillars, defoliating beetles)**
  Four different species representing a minimum of two orders and four families.
- **Scale insects and mealybugs**
  Three different species; at least one armored scale and one soft scale.
- **Aphids and whiteflies**
  Three different species; at least one aphid and one whitefly.
- **Underground turf pests (not including fire ants)**
  Three specimens represented by at least two different families.
- **Natural enemies**
  Two specimens representing a parasitoid and a predator
- **Foliar damage**
  Must submit two leaf specimens representing two of the following: stippling damage, notching, skeletonizing or window feeding, defoliation in general (partial or complete loss of leaf blade)
- **Four extras** (These can be unique groups such as leafroller or thrips or additional specimens in the above categories.)

**ENTM 6363 students must have a total of 40 specimens from any of the above categories. The overall point value for the collection will be 240 points for ENTM 6363 students.**

You are allowed to obtain up to two specimens by trading with fellow students. **Turning in old collections or taking specimens from lab collections is cheating and will result in a failing grade.**

**Collection Kits**
Collection kits are available for purchase for $16 from the Entomology Club at Auburn University. These kits include the basic supplies (vials, petri dishes, bags) needed for the insect collection. Additional supplies (bags, vials, etc) can be purchase locally if necessary. Collection kits will not contain preservative for soft bodied specimens. A 50% solution of ethylene or propylene glycol (antifreeze) should be purchased from a local source. A 50% solution is simply a 1:1 ratio of antifreeze to tap water. Kits will be available on the first day of class.
Payment can be made in person with cash or check or with a check by mail. Collections are only delivered when payment is received. If mailing a check, the envelope must include a note with your mailing address and that this is a collection kit for ENTM 5363/6363. The Entomology Club sells kits for several classes and this will insure that the correct kit is sent.

Guidelines for Collection and Preservation of Insects

The quality of the collected specimens will determine the extent to which a practitioner or professional can correctly identify a specimen. Poor quality specimens will receive point deductions or may not be counted. For example, John collects a Japanese beetle during lab and sticks it in his pocket because he forgot his collecting supplies. That night he empties the pulverized pieces of the beetle from his pocket into a petri dish. In the collection, the instructor looks at the card and the chunks of some animal in the dish and can’t tell what it was, so no points are given for the specimen. **Your grade will depend on the quality of preservation and presentation of the pests and not aesthetics.**

A. **Very tiny insects, immature insects (e.g., larvae or nymphs), and mites** should be killed and preserved by placing them directly into vials of 50% ethylene glycol or propylene glycol (antifreeze). Be sure to place a small paper label (written in pencil - ink will run!) inside the vial along with the insect. This should list the insect I.D. number, date, collector and host plant.

   Note: some insect larvae, such as white grubs, may discolor. This can be prevented by dropping them (live) into boiling water for a few seconds before putting them into the vial.

B. **Hard bodied insects** such as adult flies, beetles, moths, bugs, etc. may be killed by placing in the freezer for 24 h. Don’t collect insects with tape or a flyswatter! Nets and other collecting supplies are available to use if you want them.

   Most hard-bodied insects should be mounted using insects pins in boxes or in plastic petri dishes. The procedure for this is as follows:
   1. Place cotton or white tissue paper in bottom of petri dish, then gently place insect inside.
   2. Place lid over insect, seal with clear tape around edges of dish.
   3. Place a neatly printed or typewritten label on the back of the mount, listing the specimen I.D. number, collector, date and host plant.

C. **Specimens of insect damage** should be submitted in zip-lock plastic bags, or in petri dishes as described above. Such specimens may consist of damaged leaves, sections of stem or twig, insect galls, etc. A paper label listing specimen I.D. number, collector, date and host plant should be placed inside each bag. Don’t seal up moist leaves in plastic bags- they will mold!! Air-dry the plant material, or leave the bag open until the leaves are dry.

**Collections will be mailed to the instructor no later than 2 wk before the end of the course. It is not legal to ship ethanol, so please use ethylene or propylene glycol for preserving soft bodied specimens! If you collection is detained or not delivered because it contains alcohol, it will graded as either late or incomplete!** Nets, aspirators, and traps can be obtained by request via email of the instructor. At that time, we will arrange the best way to deliver the requested supplies.

**MAILING ADDRESS FOR INSTRUCTOR:**

Dr. David W. Held
GRADING: Your collection will be graded upon the number of specimens you submit, the accuracy of your identifications, the accompanying collection inventory, and the overall neatness of your work (points will be deducted for battered specimens, illegible labels or specimen cards, etc.). Points will be allocated as follows:

a) 4 points for each specimen x 30 possible specimens = 120 pts. These specimens must represent those in the ecological or damage categories.

b) Collection inventory. Accuracy and thoroughness of identification and information. 60 points

c) 20 points (total) for overall neatness and appearance of the collection. Please follow the guidelines for preserving and collecting specimens so you don’t lose these points.

TOTAL = 200 points (ENTM 5363)  
= 240 points (ENTM 6363)
# TENTATIVE LAB SCHEDULE AND ASSIGNMENTS

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