

Course Syllabus
Horticulture 488 (Greenhouse Management) – Fall 2020

Instructor: Dr. G.A. Picchioni, Professor

Office: Skeen Hall N344; 646-1820; gpicchio@nmsu.edu

Office Hours: Please email Picchioni for appointment on telephone, email, or if necessary, Zoom

Lab TA: Jason Fechner (Email: jfechner@nmsu.edu)

Course Description: Greenhouse Management (Sec. M01, 4 cr.; 3+2P). This course covers diverse aspects of managing a greenhouse. *Lecture:* Business and financial aspects, budgeting, site and structure, climate control, sustainability, water and nutrition, light, growth control, crop scheduling, pests, and preharvest and postharvest management. *Laboratory:* Worker protection standards, crop selection, utilities, data management, medium analysis, financial spreadsheets, communication with growers, hands-on greenhouse crop production, product sales, campus plantings.

Class Meetings: Lectures meet 10:30 to 11:45 am (T/TH), **Online via Zoom**
Labs meet 4:30 to 6:30 pm (W), **Online (Zoom) and in-person (see syllabus)**

Covid-19 Safety: **Students must complete the Crimson Commitment Classroom COVID-19 Safe Practices Acknowledgement Form and email it back to Picchioni on the first day of class.** Students must adhere to the safety rules that are listed on the Crimson Commitment. If a student is unable or unwilling to comply with the Classroom COVID-19 Safe Practices, they must leave the classroom willingly and seek alternative academic course options. Should a student fail to meet any of these expectations, they may be subject to action as per the NMSU Student Social Code of Conduct (ARP 5.20). Students must also view the 6-minute Crimson Commitment video at https://youtu.be/ByYuUNy_GPc, and read “NMSU Ready” in pdf at <https://ready.nmsu.edu>.

Learning Goals: Establish, operate, and maintain a greenhouse
Greenhouse business and marketing skills, horticulture techniques
“Hands-on” greenhouse production
Greenhouse sustainability issues
Emerging trends in the greenhouse industry

Textbook: Nelson, P.V. 2012. Greenhouse operation and management. 7th Ed. Pearson-Prentice Hall, Upper Saddle River, NJ. The book will not be on reserve at Zuhl Library due to Covid transmission risk. To avoid penalizing students who cannot purchase or rent the book, I will cover exam-related topics in lectures, maintain recorded lectures and notes, and list exam topics on exam study guides.

Journal Literature: Required readings in trade and scientific literature will be placed in Canvas.

Note-taking: Please purchase an inexpensive spiral or bound notebook for Zoom meetings and in-person lab meetings. Also, have plenty of pencils and pens for writing and note-taking. To avoid Covid-19 transmission, please avoid sharing any of these items with others.

Attendance: Attendance is required for all class meetings. For an excused absence due to illness or an NMSU-sponsored student activity, please notify Picchioni. Students are expected to provide written verification for these excused absences. It is the student’s responsibility to obtain class notes from a classmate for an excused absence.

What I expect from students: Have a passion for the subject, attend regularly, be on time, meet assignment deadlines, spend meaningful time on out-of-class assignments, get involved in class discussions and activities, take the subject seriously, and show that you want to be in this course.

What the student should expect from me: Active labs, fairness, willingness to help, approachable, and concern about quality of students' work and training.

Electronics Needs: Canvas will be the gatekeeper of information. Canvas is compatible with Windows, Mac, Linux, iOS, Android, or any other device with a modern web browser. Please avoid using MS Edge and Internet Explorer when using Canvas. Use Firefox, Chrome, or Safari. Canvas will contain the syllabus, lectures, exams, lab assignments, lab photographs, group collaborations, videos, required journal readings, web links, and other materials as needed. Students must use their NMSU email address in Canvas for class communications. Students must have access to current versions of Adobe Reader and MS Office (Excel, Word, PowerPoint), and NMSU-Zoom. As of August 7 and until further notice, the Hardman Jacobs computer lab is open Monday through Friday from 9 am to 4 pm.

Disability Accommodation and Discrimination Policy: Section 504 of the Rehabilitation Act of 1973 and the ADA Amendments Act of 2008 covers issues relating to disability and accommodations. If a student has questions or needs an accommodation in the classroom, they should contact Student Accessibility Services (SAS), Corbett Center Student Union Room 208, 575-646-6840 (V/TTY), sas@nmsu.edu. Please let me know through SAS memorandum if you need a specific accommodation, such as extended examination time, or other accommodation. All medical information is treated confidentially.

New Mexico State University, in compliance with applicable laws and in furtherance of its commitment to fostering an environment that welcomes and embraces diversity, does not discriminate on the basis of age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, sex (including pregnancy), sexual orientation, spousal affiliation, or protected veteran status in its programs and activities, including employment, admissions, and educational programs and activities. Inquiries may be directed to the Executive Director of the Office of Institutional Equity (OIE), O'loughlin House, P.O. Box 30001, 1130 E. University Avenue, Las Cruces, NM 88003; 575-646-3635; 575-646-7802 (TTY); equity@nmsu.edu.

Title IX prohibits sexual harassment, sexual assault, intimate partner violence, stalking, and retaliation. For more information on discrimination or Title IX, or to file a complaint, contact the OIE.

Other NMSU Resources:

NMSU Police Department: (575) 646-3311

NMSU Police Victim Services: (575) 646-3424

NMSU Counseling Center: (575) 646-2731

NMSU Dean of Students: (575) 646-1722

For Any On-campus Emergencies: 911

Academic and non-academic misconduct. The Student Code of Conduct defines academic misconduct, non-academic misconduct, and their consequences. The Student Code of Conduct is available in the NMSU Student Handbook online: <http://studenthandbook.nmsu.edu/>. Academic misconduct is explained here: <http://studenthandbook.nmsu.edu/student-code-of-conduct/academic-misconduct/>.

Lectures and Exams: The first half of the semester will focus on **management of a greenhouse enterprise**, while the second half will cover **management of the crop**. Exams will cover mainly lecture and required text material, although the instructor reserves the right to include lab or other materials wherein appropriate. There will be three lecture exams which include a final exam; each will be non-cumulative unless otherwise forewarned in advance. No make-up exams will be available unless the student has an excused absence for the day of the exam (see attendance policy).

Lab Group Crop Production Project: Student groups of four will be randomly determined to work on one of the following greenhouse crop production assignments:

- 1) Poinsettia
- 2) Hydroponics
- 3) Pansy and Petunia
- 4) Swiss Chard and Flowering Kale
- 5) Dusty Miller and Viola
- 6) Snapdragon and Dianthus

The crops will be grown at Fabian Garcia Agricultural Science Center and at the Skeen Hall greenhouse. We intend to gain experience, market for sales, take plants home with us, and help beautify the campus. Students will arrange greenhouse time outside of class time with the TA to share group tasks like watering, scouting for pests and other problems, measuring growth, recording temperatures, taking weekly digital photographs, keeping daily crop records (fertilization, growth regulation, pest management, light management, temperatures, etc.), and making general observations of the plants.

Students will present a group PowerPoint presentation on their crop production experience during the week before finals to include all of the crop records and photographs noted above, plus research on the literature relevant to their project. The group presentation must include an introduction, main body, and summary, and should last no longer than 20 minutes counting questions from the class audience. Groups are strongly encouraged to practice their talks to keep the length within 15 minutes and allow for questions. Each student must contribute to the PowerPoint and the oral presentations. Original material from published print or internet sources (data, pictures, facts and statements, or other) must be cited in the presentation slides with a complete bibliography at the end of the PowerPoint. A 1-page or shorter executive summary must be emailed to the class members and Picchioni by November 17.

Written progress reports are due during the semester (see lecture syllabus). Students will hold themselves accountable for their efforts with their crop production project, literature review, preparation of progress reports and presentation, and giving the presentation. It is the responsibility of the students to see that all members are doing their fair share of the work. In the progress reports, the instructor needs to be told “who’s doing what” on the group projects.

The group lab project counts 25% of the semester grade. Please take your group assignments seriously, avoid procrastination, and stay busy throughout the semester in making good progress on your group project. On average, each student should spend at least two hours per week on this project including growing the crops, processing data and photos, and preparing the progress reports, executive summary, and PowerPoint. The individual grade will be a function of the overall group, so every group member must participate to maximize the grade. See recent examples in Canvas.

Lab Assignments: Lab assignments/exercises are due no later than the next day at Thursday lecture (unless noted otherwise); same-day submission is acceptable (see lab schedule). No assignment make-ups will be provided unless student has an excused absence on the due date (see attendance policy).

<u>Grade Components:</u>	<u>Course Requirement</u>	<u>% of Total Grade</u>
	Lecture Exams (3)	50
	Group Lab Project and Presentation	25
	Lab Assignments and Field Trip Reports	25
	Total	100

Grading Scale: 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, <60% = F

ONLINE ZOOM TUESDAY/THURSDAY LECTURE SCHEDULE; DUE DATES AND EXAMS ARE HIGHLIGHTED

<u>Date</u>	<u>Topic</u>	<u>Text Reading*</u>
Aug. 20	Introduction; Course syllabus and guidelines Introductory remarks by instructor Greenhouse production as global industry Greenhouse marketing	Nelson, Ch. 1 Nelson, Ch. 16
<u>Part I</u>		
<u>Managing the Greenhouse Enterprise</u>		
Aug. 25-27	Business planning, structure, recordkeeping Selected greenhouse manager web tools	Nelson, Ch. 17 Internet
Sept. 1	Site selection	Nelson, Ch. 2
Sept. 3	Structures, coverings, construction	Nelson, Ch. 2
Sept. 8-10	Heating systems	Nelson, Ch. 3
Sept. 15-17	Cooling and ventilation systems	Nelson, Ch. 4
Sept. 22	Exam 1	
Sept. 24	Environmental control systems Group lab project/presentation progress report	Nelson, Ch. 5
Sept. 29	Energy conservation and recycling	Nelson, Ch. 3
<u>Part II</u>		
<u>Managing the Greenhouse Crop</u>		
Oct. 1-6	Irrigation and water quality	Nelson, Ch. 8
Oct. 8	Alternative culture systems	Nelson, Ch. 8
Oct. 13-15	Growing media and crop nutrition	Nelson, Ch. 6 and 9
Oct. 20-22	Lighting – natural, artificial, photoperiod	Nelson, Ch. 11
Oct. 27	Exam 2	
Oct. 29	Carbon dioxide enrichment Group lab project/presentation progress report	Nelson, Ch. 10
Nov. 3	Growth regulation – non-chemical, chemical Growth regulation – DIF (additional text, Ch. 11)	Nelson, Ch. 12 Nelson, pp. 364-367
Nov. 5	Crop scheduling	Internet (examples)
Nov. 10-12	Pest management; Executive Summaries*	Nelson, Ch. 13 and 14
Nov. 17-19	Maintaining postproduction quality	Nelson, Ch. 15
Nov. 23-27	Thanksgiving break	
Dec. 1-3	Group lab project presentations	
Dec. 8	Exam 3 (Final Exam) (10:30 am to 12:30 pm)	

*Required journal readings not shown.

**For the group lab project Executive Summary due date (November 17), students must email their summary to the instructor and classmates and, if time permits, provide the class with a final update on the progress of their presentation.

WEDNESDAY LAB SCHEDULE
ONLINE ZOOM AND IN-PERSON

Date	Activity	Assignment*	Location**
Aug. 19	Overview of course and its hybrid format Covid-19 safety: Crimson Commitment Form due today Lab crop production projects		Zoom online
Aug. 26	Worker protection standards training (J. Beacham)		Zoom online
Sept. 2	Plant greenhouse crops Calculating fertigation rates	X	Greenhouses
Sept. 9	Crop data collection (light, soil, insect scouting, growth) Pour-thru medium analysis and interpretation		Greenhouses
Sept. 16	Graphical tracking of poinsettia crop for height regulation	X	Zoom online
Sept. 23	Inspect crops, collect data Plant spacing and light calculations	X	Greenhouses
Sept. 30	Inspect crops, collect data PGR calculation, chemical safety, equipment, sanitation	X	Greenhouses
Oct. 7	Outdoor annuals planting, NMSU campus		Sites TBA
Oct. 14	Outdoor annuals planting (continued)		Sites TBA
Oct. 21	Hemp cultivation in greenhouses (speakers TBA) Hemp article reviews	X	Zoom online
Oct. 28	Virtual tour of Sunland Nursery Color Division	X	Zoom online
Nov. 4	“What-if” cost: return analysis	X	Zoom online
Nov. 11	Customer database analysis	X	Zoom online
Nov. 18	Utilities costing; retail garden centers trip assignment Inspect campus plantings (on your own)	X	Zoom online
Nov. 23-27	Thanksgiving break		
Dec. 2	Greenhouse product marketing (S. Green) Report findings at retail garden centers Report findings on campus plantings	X	Zoom online

*The 10 lab assignments are marked with an “X” and are due no later than the next class day at Thursday lecture unless otherwise instructed (see “assignment” column). Same-day completion and submission by the end of the lab period is acceptable.

For lab meetings at the “Greenhouses,” we will be meeting at two sites. One half of the class will meet at Skeen W180 and the other half will meet at Fabian Garcia Agriculture Science Center (FGSC), then students will alternate sites with succeeding weeks. Students will be asked to drive themselves to FGSC (poinsettia crop). **Directions to the Skeen greenhouse: Go to the north courtyard of Skeen next to the fountain, and the greenhouses will be directly in sight toward the west just off Knox Street; go to the main entry door on the driveway ramp (Skeen W180). **Directions to FGSC greenhouse:** From Skeen Hall, drive west on E. University Ave., pass IHOP, Ramada Inn, and Whataburger on the right, go straight through the main street I-10 underpass, cross the stop light and railroad tracks, then drive into the second left turnout at FGSC. Park in the dirt lot where all the building are. Then walk directly south only a few hundred feet to greenhouse #351 which is where we will be meeting.



**NMSU READY - Crimson Commitment
Classroom COVID-19 Safe Practices
Acknowledgement Form**

* Syllabus Addendum *

CLASS Number/Name:

HORT 488/Greenhouse Management

Fall 2020

Because COVID-19 is a disease that spreads primarily from person to person, all employees, students and visitors are expected to take personal responsibility for their own health, help protect the health of others, and keep the Aggie community safe from the spread of COVID-19 and other infections.

To minimize the risk to public health presented by the spread of COVID-19 while working and learning at NMSU, **students are expected to adhere to the following expectations:**

NMSU CLASSROOM SAFETY EXPECTATIONS	My Initials
<p>1. I understand the NMSU Ready- Crimson Commitment Statement and I commit to:</p> <ul style="list-style-type: none"> • Personally Protect My Own Health • Protect Other Aggies • Keep the Aggie Community Safe 	
<p>2. I will wear the multilayer cloth face covering or personal protective equipment and practice proper hand-washing techniques frequently. <i>If I need an exception for the face covering, I will contact the Office of Dean of Students via email at DOS@nmsu.edu.</i></p>	
<p>3. I will maintain physical distance of at least 6 feet between myself and others to limit the chance of acquiring or spreading COVID-19.</p>	
<p>4. I will follow instructions regarding the decontamination of classroom work surfaces and my personal work space.</p>	
<p>5. I will follow instructions regarding seating instructions in campus classrooms.</p>	
<p>6. I agree to closely monitor my health and will not attend class or participate in face-to-face activities if I feel sick or if I develop or display symptoms of COVID-19.</p>	
<p>7. If I have a positive test for COVID-19 or I develop symptoms, I agree to notify the Aggie Health and Wellness Center (call 575-646-1512 or email campus_health@nmsu.edu).</p>	
<p>8. If I am unable or unwilling to comply with the Classroom COVID-19 Safe Practices I will leave the classroom willingly and seek alternative academic course options.</p>	
<p>9. I understand that failure to follow these expected behaviors would be detrimental to public health efforts and could impact my ability to continue my coursework at NMSU.</p>	
<p>10. I acknowledge the importance of following COVID-19 Classroom Safety Practices and I understand that should I fail to meet any of these expectations I may be subject to action as per the NMSU Student Social Code of Conduct (ARP 5.20).</p>	

I understand and acknowledge the following Classroom COVID-19 Safe Practices and will abide by these expectations throughout the duration of the course.

FULL NAME

SIGNATURE

DATE