

Ag 263

Composting and Vermicomposting 3 Credits

Fall Semester 2020

Class Syllabus

Lecture: TR 0930-1020a CAB 201
Laboratory: T 0330-0600p CAB 201

Contact Information:

Instructor: Norman Q. Arancon

Laboratory:

Office: BO 114A

E-mail: normanq@hawaii.edu (business); ag263uhh@gmail.com (class requirements)

Office Hours: by appointment

Introduction:

This course is offered to all students. This is a Natural Science Elective, Hawaii Pan-Pacific, World Culture, Global Community Citizenship and Writing Intensive courses for Gen. Ed, but does not satisfy the Natural Science laboratory requirement. The course will tackle current regulations, basic theories, best management practices of organic waste handling and practical ways of the application of the products of composting and vermicomposting in Hawaii, US and some parts of the world. Those who specialize in animal and plant systems and other enthusiasts, especially those who are in the areas of organic waste recycling and production of alternative soil amendments will benefit from taking this course. The course will be presented in Fall of each year and will involved two 50-minute lecture sessions by the Instructor and one 2.5- hour laboratory sessions weekly. Each of the laboratory session will involve short-term experiments and demonstrations that will apply theories discussed in lectures sessions or assigned readings.

Student requirements will include:

- Attending lectures and laboratory sessions
- Reading assigned articles from textbook, supplemental handouts, or the web
- Establish and maintain composting and vermicomposting projects
- Term paper and oral presentation

Course Student Learning Outcomes:

Learning outcome 1: Acquire, integrate and apply knowledge of **agricultural waste management principles and practices**

Goal 1. Use multiple sources, including current and older literature, to find, evaluate, organize and manage information related to agricultural waste management with special focus on composting and vermicomposting

Goal 2. Apply scientific principles and practices of composting and vermicomposting

Goal 3. Apply concepts of horticulture, microbiology or environmental science and other related fields which students majored in to manage and improve waste management practices

Learning outcome 2: Synthesize knowledge and use insight and creativity to better understand and improve practices in composting and vermicomposting

Goal 1. Anticipate and recognize problems of certain waste management practices, identify causes of those problems, quantify potential impacts, analyze options, identify viable solutions to the problems, and evaluate actions and consequences of treatments and interventions

Goal 2. Develop, and employ best management practices of composting and vermicomposting that lead to proper waste management of agricultural wastes

Goal 3. Understand how global issues of wastes including agricultural, food, industrial and other organic wastes can impact environment

Learning outcome 3: Appreciate and communicate the diverse impacts of proper waste management especially composting and vermicomposting on people and the environment

Goal 1. Communicate effectively using oral, written and visual presentation skills, and contemporary networking/social technologies the theories and principles of composting and vermicomposting

Goal 2. Describe the various ways these technologies impact human well-being

Goal 3. Describe and assess the influence composting and vermicomposting in agriculture, soil, plant and suppression of pests and diseases

Goal 4. Quantify the economic impacts of composting and vermicomposting practices and their utilization in agriculture.

Goal 5. Describe the social and cultural implications of sustainable farming practices and technologies to historical and contemporary communities of people.

Learning outcome 4: Demonstrate professionalism and proficiency in skills that relate to agricultural waste management

Goal 1. Demonstrate leadership and ability to collaborate and work in teams in assigned group projects i.e. compost and vermicompost projects

Goal 2. Demonstrate a high level of personal and social responsibility

Goal 3. Develop a plan for life-long learning as it relates to career choice and lifestyle options

Goal 4. Develop thoughtful, clear, and consistent perspectives on ethical and moral issues related to agricultural waste management

Goal 5. Demonstrate knowledge of range of cultures, values, and political perspective for living in a global community

Goal 6. Plan, engage, and learn from actions that demonstrate civic responsibility and society through the application of technologies in waste management

Textbook and Main Reference

There is no text book for this course. Selected readings will be posted online. Lecture outlines will be posted online. It is the responsibility of each student to take detailed notes during lecture times.

Course Grading

1. Journal (10 points each). For each of the lab session, a one-page journal should be submitted due one in 7 days. **Journals should be typewritten and submitted electronically to: ag263uhh@gmail.com.** LATE journals will not be accepted. You will have a chance to get full credit if journals are revised accordingly.

Write your journal in **narrative (200 words minimum)** form containing the following items. Sample journals are posted on laulima:

1. Name
2. Log No. and Date of Lab
3. Objectives
4. Activities undertaken
5. Plants and seeds used
6. Fertilizers used, include amounts, application methods
7. Tools used
8. Insights, pictures

Students will have the opportunity to revise and resubmit the first 5 journals.

2.Examinations. Students will be graded on 3 written examinations: 2 midterm and one final examination, laboratory journals and term paper/oral presentation. The three 60-minute written mid-term and final examinations will involved a variety of short-answer essay type questions. These will evaluate the students' ability to integrate and summarize the knowledge that they have acquired throughout the course.

3. Field trip report. This is a requirement for each student to maintain detailed organized records of all activities undertaken in each of the scheduled field trips. This will include the following but not limited to: Date, times, cultivar and scientific names of plants handled and observed, locations, presenters, hosts, methods and materials used, practices observed and undertaken and personal insights. Reports are worth 20 points each. You cannot write a report if you are absent in a field trip. Reports are due 7 days after a trip and should be typed-written. Photos may be included and are encouraged.

4. Project.

- a) Composting. The class will mainly support the on-going composting program on campus which will include at collection of compostables in the dining hall, processing and composting which include regular turning of compost pile. Scheduling will depend on the class composition and availability of time. Scheduling will be done at the start of class. Assessment will be based on attendance (based on time committed). (50)
- b) Vermicomposting. Each student will maintain a culture of earthworms. A certain number of earthworms will be given to each student and will be raised in a bin of choice. Feeding will be monitored and documented (type and amount). Growth and population will be assessed at the end of the semester (50)
- c) Experiments using composts and vermicomposts will be discussed in class.

Oral report (Group): 50

The presentation shall highlight the progress of the project from the initial procurement of materials up to the execution portion of waste management plan. It shall introduce the components of the project based in the criteria for evaluation. The group report can be in different format. Oral reports should be done by a representative of the group (selected) and report should be in a 15 minute ppt. Other report format can be done in a 10-min video.

Written report (Individual): 50

This is an individual requirement that is mainly a narrative (1500 words minimum) of the project from start to finish. It shall include the following:

Title Page

Abstract/Summary: Half page summary of what the project is all about including: objectives, activities undertaken, challenges, difficulties, and how they were resolved and a concluding statement.

Introduction: Introduce your project, your group mates, your goals and objectives, and the elements of the best management practices of the project chosen.

Materials and Methods: How did start it? Design? Your plans and how you carried them out? What are the materials you used? What practices/ procedure discussed in class or practiced somewhere else that you have used that fit into best management practices of waste management? Describe how they were done. What are your challenges and learning? You may talk about your team mates and cooperation and how group dynamics affected the output of your project (This part will remain confidential). This important since this is a 'community' effort.

Conclusions and recommendations: Make your conclusions and personal insights, regrets, joys and suggest improvement (if any) for future students in this class. Evaluate the class in general.

Students will have an opportunity to revise and resubmit final written report.

Community Engagement/Service and Workshop. One- two laboratory schedule will be devoted to community service. Students shall be grouped into teams. Each team will choose a project that involves recycling, composting/vermicomposting of organic wastes. Areas that could be sites for projects include (but not limited to) Boys and Girls Club, Malia Puka O Kalani Church Gardens, UH Hilo Campus dining services, UH Hilo gardens. Alternatively, teams can deliver a seminar/training/workshop to a class in Hilo High School or Kamemeha School on the basics of composting and vermicomposting. Each workshop shall involve pre-survey of the school site, conduct the workshop and conclude with hands-on demonstration.

GRADING

| | Points | Percent | Total % | Due |
|--------------------------|------------|---------|---------|---------|
| Midtem | 100 | 10 | | |
| 2nd MT | 100 | 10 | | |
| Journals | 130 | 19 | | 7 days |
| Finals | 100 | 15 | | see web |
| Field trip | 50 | 7 | | 7days |
| Project | | 0 | | |
| Proposal | 50 | 7 | | |
| Garden | 50 | 7 | | 2-May |
| Oral report | 50 | 7 | | |
| Written | 50 | 7 | | |
| Community service | 100 | 10 | | |
| TOTAL | 780 | | | |

The grades will be assigned according to these total scores:

| | | | |
|-----------|---|-----------------|--|
| A | = | 96 - 100 | |
| A- | = | 91-95 | |
| B+ | = | 86-90 | |
| B | = | 81-85 | |
| B- | = | 76-80 | |
| C+ | = | 72-75 | |
| C | = | 68-71 | |

| | | | |
|-----------|---|----------|--|
| C- | = | 64-67 | |
| D | = | 60-63 | |
| F | = | below 60 | |
| | | | |
| | | | |

Lecture Topic Outline

Introduction and Housekeeping

Waste: definition, types, volumes (World, US and Hawaii)

Agricultural waste characteristics (World, US and Hawaii)

Laws, regulations, policy and water quality criteria (US and Hawaii)

Role of soil in waste water management

Role of plants in waste water management

Geologic and ground water considerations

Siting agricultural waste management systems

Systems and component design

Composting

Overview, history (World, US and Hawaii)

The process: principles

Systems and designs: Operation, maintenance and safety

The product: characteristics of composts and water extracts

Utilization of composts in horticulture

Vermicomposting

Overview, history (World, US and Hawaii)

The process: principles

Systems and designs

The product: characteristics of vermicomposts and water extracts

Utilization of composts in horticulture

Laboratory Schedule (subject to change)

- 1) Tour, Project Planning, Proposal Preparation and Presentation
- 2) Procurement of materials, construction
- 3) Project Implementation
- 4) Project implementation

- 5) Project Implementation, and maintenance
- 6) Project Implementation and maintenance
- 7) Field Trip
- 8) Project Implementation and maintenance
- 9) Project Implementation and maintenance
- 10) FIRST EVALUATION
- 11) Community Service
- 12) Community Action/Volunteer/Field Trip
- 13) Harvesting and Project Implementation, and maintenance
- 14) SECOND EVALUATION and Project Presentations –

ALL STUDENTS MUST SIGN A RISK AND RELEASE FROM PRIOR TO FIELD TRIPS AND LAB EXERCISES.

Academic Misconduct/Dishonesty

All forms of academic misconduct, including plagiarism and dishonest practices in connection with examinations, will be reported to the office of the Vice Chancellor of Academic Affairs for disciplinary action.

Farm/ Lab Safety

In compliance with farm lab safety, all students are required to wear covered shoes in all field laboratory classes.

Disability Assistance

Any student with a documented disability who would like to request for accommodations should contact the University Disability Services Office (Voice: 933-0816 or TTY: 933-3334, uds@hawaii.edu, Hale Kauanoë, A-Wing Lounge) as early in the semester as possible.

UH Hilo Sexual Assault Policy:

UH Hilo provides confidential assistance for victims of sexual assault.

Counseling Services on-campus and the YWCA Sexual Support Services off-campus offer guidance regarding medical assistance and emotional help and can discuss options for reporting sexual assaults to law enforcement.

All conversations are private and confidential. The UH Hilo Sexual Assault Policy can be found at:

<http://hilo.hawaii.edu/uhh/vcsa/documents/UHHSexualAssaultPolicy.pdf>

For assistance during the day, contact UH Hilo Counseling Services at (808)

932-7465; or, after hours and on weekends, contact the YWCA Sexual Assault Support Services at (808) 935-0677.

Advising

Advising is a very important resource designed to help students complete the requirements of the University and their individual majors. Students should consult with their advisor at least once a semester to decide on courses, check progress towards graduation, and discuss career options and other educational opportunities provided by UH Hilo. Advising is a shared responsibility, but students have final responsibility for meeting degree requirements. Please feel free to contact the Advising Center at ext. 7776 if you have any questions or concerns.

Videotaping in the Class Room

Students who desire to audio and/or video tape class lectures or activities must first solicit approval from their instructor or professor, in writing (e-mail is sufficient). If this request is due to a disability, the request should come from Disability Services (Susan Shirachi) as a reasonable accommodation. Faculty may deny the request if it is not an accommodation to a disability.

If a student is granted permission to audio/video tape any portion of a class, s/he must be informed that this does not constitute permission to reproduce or post the information on any social media, You Tube, or other public or private forum that would infringe on the privacy rights of others represented in the audio/video recording.