

UNIVERSITÉ NOTRE DAME D'HAÏTI
UNITÉ DIOCÉSAINE DE HINCHE

COURSE OVERVIEW

ENERGY FOR SUSTAINABLE
DEVELOPMENT: SOLAR COOKING

COORDINATOR : ROSE BAZILE

INSTRUCTOR : SARDELLE

Autumn 2018

I. Sapaterre, National Road # 3, B.P.1594, Hinche, Haiti.

Instructor e-mail:

Phone:

COURSE NUMBER:

CREDIT HOURS: 2.0 credit elective

Semester / YEAR: Fall, 2018

II. Effective dates: October 20, 2018- Feb 9, 2019**III. DESCRIPTION OF THE COURSE**

The purpose of this 2-credit course is to introduce solar cooking in Haiti.

- Learn more about solar cooking and its important role in sustainable development
- Understand the solar cooking process through research, experimentation and data collection.
- Use the technical design process to create a functional oven that can be demonstrated and shared with community members.
- Build capacity for economic empowerment by developing leadership, entrepreneurship, communication and career management skill
- Plan and cook meals to share with others as a culminating activity.
- Explore a popular advocacy approach for solar cooking, with participants as the main resource.

IV. COURSE ACTIVITIES OVERVIEW

The class will discuss why solar cooking in Haiti, solar energy, its use, the history of solar cooking, its advantages and disadvantages. Students should read the manual on solar cooking, complete reading assignments before class and participate in class discussions. There will have 3 projects:

1. Cook every day on campus with the solar oven in group,
2. Make or manufacture solar ovens using local materials,
3. Form a self-help group in your neighborhood to facilitate others to earn an oven.

Students will be assessed on attendance, preparation and participation of class activities and assignments. They will have 3 quizzes and 2 exams, one for mid-term and final. The final will be cumulative.

V. COURSE OBJECTIVES / OUTCOMES:

At the end of this course, the student will be able to:

1. Discuss the basics of solar cooking
2. Why solar stoves in Haiti
3. How to make or purchase a solar oven
4. Cook food with free solar energy
5. Clean cook stoves for sustainable development and health care
6. How to observe and collect data
7. Form a self-help group

8. Identify ways to increase their knowledge of social responsibilities in promoting solar cooking.
9. Describe the specific skills that are important in entrepreneurship/ business management.

VI. METHODS OF LEARNING:

- Reading assignments
- Discussion / demonstrations
- Lectures, experts guesses
- Active participation in the experiments,
- Video on SCI website,
- Laboratory or solar cooking with each meeting

VII. COURSE FORMAT:

The format of the class is "flip the class room". This means investigating and searching for topics before class. Be prepared to discuss relevant issues by breaking down the information to support a higher level of understanding, synthesis, and connection. A pre and post-class assessment test to determine the student's knowledge and progress. Opportunities for feedback from guest speakers and mentors, peer review, focus groups and video.

VIII. EVALUATION METHODS:

- The course is classified as a pass or fail
- Participation in classes, class discussion
- Contribute to your team
- All homework must be submitted by the due date
- Participation in all on-site education projects
- Follow all safety precautions and use safety equipment during class and presentations.
- Attention: In order for the objectives of the course to be satisfactory, students must attend all sessions.
- **Punctuality:** Students must arrive on time.
- The instructor is allowed to refuse students who arrive 15 minutes late.
- Three lateness equals an absence
- Come motivated to class and interested in learning and create your own original work.

Scale of evaluation:

5% quizzes

Exams, midterm 10%, final 20%

Active participation and presentation of a solar cooking project 25%

Self-help group 20%. Make a solar stove 20%

Student Competence: Skills - each student performs in accordance with the procedures as satisfactory and unsatisfactory. Such as: solar cooking and making a solar oven.

Evaluation by Students: At the end of the course students will write an evaluation of the course and the faculty

IX. READINGS REQUIRED:

Solar cooking basics. Introductory manual. Curriculum

www.solarcookers.org

[http://solarcooking.wikia.com/wiki/Solar Cookers International Network %28Home%29](http://solarcooking.wikia.com/wiki/Solar_Cookers_International_Network_%28Home%29)

<http://cleancookstoves.org/home/index.html>

[http://solarcooking.wikia.com/wiki/Promoting solar cooking](http://solarcooking.wikia.com/wiki/Promoting_solar_cooking)

- Trainers Manual: Teaching Solar Cooking
- Field Guide: Spreading Solar Cooking
- Solar Cookers: How to Make, Use, and Enjoy (in English and in French)

X. COURSE REQUIREMENTS:

Registration for the course within the framework of the University Of Notre Dame

1. Attendance at each conference and class meeting.
2. Completion and submission of course work.
3. Completion of all activities and missions

XI. PROFESSORS NOTES:

The team activities will be completed by incorporating student inquiry and student-led objectives into the final product. The topics are selected based on the objectives of the solar cooking program. The professors leading this class value the students' inquisitiveness and development, but strongly believe that it is in the student's best interest that they are at the center of their investigation and discovery, while creating habits that will foster and stimulate their continued growth. We aim to have students play the primary role of helping to develop their own learning opportunities, objectives and goals. Ultimately, we seek to generate more engaged students who are willing to serve society while continuing to be at the center of developing their future.

XII. COURSE CALENDAR / topical outline (subject to change)

Week 1: Introduction

- Sustainability: what is it and why is it important?
 - United Nations Sustainable Development Goals
 - Why solar cooking is important?
- Advantages of solar cooking

Week 2:

- Principles of light and basic principles of solar energy experiments.
- How do solar cookers work?
- Where is solar cooking possible?

Week 3:

Solar cooking basics

- Cooking guidelines

Solar cooker tests

Data collection

- Watch the sun
- Solar cooking tips and tricks

Week 4:

- History and applications of passive solar energy and solar cooking
- solar cooker adoption and impact survey, exploratory resident survey

Week 5:

- Heat storage (a simple introduction for this class)
- Recipes – adaptations for solar cooking, recipes collection
- Solar cookbooks

Week 6:

- CO₂ balance.
- Buy a solar oven
- Health and security

Week 7: Midterm

Week 8: Solar stove components

- Build a solar oven
- Solar pots
- Reflective material
- Glazing

Week 9:

Main Types of Solar Cookers

- Box
- Parabolic
- Vacuum tubes
- Panel
- Institutional Solar Cookers
- Others

Week 10:

Self Help Groups

- Promote Solar Cooking
- Frequently Asked Questions
- Emergency Preparedness

Week 11:

- Manufacturers and sellers
- Water and milk pasteurization
- Food drying
- Sanitation, Pasteurization vs. Sterilization

Week 12:

- Entrepreneurship: local business or start-up success.
Create a business plan
Qualities of an entrepreneur for success
10 great qualities of entrepreneurs
Submit: self-help projects, surveys, and completed your solar cooker

Week 13:

- How to promote a new product or service
 - Most important solar cooking projects
- Other household uses for solar cookers

Week 14:

- Solar cooking and emergency preparedness
 - Promote solar cooking;
- 9 ways to promote a new service or product for your business:
Last chance to submit projects

Week 15: Final

Course and faculty evaluation by students

XIII. TOPIC CONTENT/LESSON PLANS**Week 1 – Sustainability- October 20, 2018**

Objectives: At the end of the class students will be able to define sustainability and its importance, the 17 UN developmental goals

Introduction: Course Requirements, Expectations and Assessment Tool, project development, rubric, and review the syllabus

Lab: 1st 15 minutes: Prepare a cake and place it in the sun to bake using the Roche Cooker

Lecture: *“What is sustainability and why is it important?” – ½ hour lecture and 1/2h discussion*

The seventeen United Nations Sustainable Development Goals and relationship to solar cooking

Guest speaker: Dr. David Stillman

Last ½ hour: Quiz, Homework, and then eat cake

Week 2 - Principles of Sunlight and Solar Energy- October 27, 2018

Objectives: At the end of the class students will be able to understand principle of sunlight and solar energy, how solar cookers works.

Lab: 1st 10 minutes, use the sport solar oven to cook hard boiled eggs.

10 minutes: summary of last week class

10 minutes quiz on today's topic

Lecture: 1 hour lecture and discussion on principle of light and solar energy

Guest speaker: Onel

Last ½ hour: Quiz, Homework, and then eat eggs

Week 3 - Cooking guidelines- Nov 3, 2018

Watch the sun**Solar cooking tips and tricks**

Objectives: at the end of the class students will be able to follow solar cooking guidelines, watch the sun, and learn solar cooking tricks and tips.

Lab: 1st 15 minutes, prepare corn meal and fish and use the sport oven and Roche solar oven to cook outside.

10 minutes for last week summary

5 minutes for quiz on today topic

Lecture: 1 hour of lecture and discussion

Last ½ hour: Quiz, Homework, and then eat meals. Complete survey and student input

Guest: Martha/Rose

Week 4 - History and applications of passive solar energy and solar cooking. Research passive solar energy concepts, - Nov 10, 2018

Objective: at the end of the class students will be able to discuss history and applications of solar energy

Lab: 1st 15 minutes, prepare corn meal and fish and use the sport oven and Roche solar oven to cook in the sun.

10 minutes for last week summary

5 minutes for quiz on today topic

Lecture: 1 hour of lecture and discussion

Last ½ hour: Quiz, Homework, and then eat meals. Complete survey and student input

Week 5 - Heat Storage. Alternative Uses. Recipes and Solar Cookbooks - Nov 17, 2018

Objectives: at the end of the class students will be able to know how to store solar heat, recipes and cook book available.

Lab: 1st 15 minutes, prepare rice and beans and chicken creole using the sport oven and Roche solar oven to cook outside.

10 minutes for last week summary

5 minutes for quiz on today's topic

Lecture: 1 hour of lecture and discussion on heat storage, recipes and cookbooks

Last ½ hour: Quiz, Homework, and then eat meals, complete survey and student input

Guest: Martha port

Week 6 - CO₂ Balance. Health and Security. Buy a Solar Oven – Nov 24, 2018

Objectives: at the end of the class students will be able to define CO₂ balance, how to buy a solar oven, health security and solar cooking

Lab: 1st 15 minutes, prepare rice and beans soup and goat meat using the sport and Roche solar oven to cook in the sun.

10 minutes for last week summary

5 minutes for quiz on today topic

Lecture: 1 hour of lecture and discussion on Co₂ balance, Health and security, Buy a solar oven, health and security

Guest Speakers: Rose Bazile and Mike Port /Rose translator

Last ½ hour: Quiz, Homework, and then eat meals, complete survey and student input

Week 7 - Midterm Exam – Dec 1, 2018

Midterm exam includes topics of weeks 1-6 IS 10% of your grade. It will be 30 questions consist of multiple choices, fill in the blanks and short answers). Biogas and Solar Cooker Committee will make the questions and the curriculum committee will revise the test before administering.

Week 8 - What do you need to make a solar oven? Solar pots, Reflective Material and Glazing Dec 8, 2018

Objectives: at the end of the class students will be able to know what is needed to make a solar oven, solar pots, reflective material and glazing.

Assignment: Students will make their own solar cooker this week.

Guest Speaker: Martha Port / Rose Translator

Lab: 1st 15 minutes prepare squash, bread fruit, and fish using the sport and Roche solar oven to cook with sun energy.

10 minutes for last week summary, review midterm exam

5 minutes for quiz on today topic

Lecture: 1 hour of lecture and discussions on week 8 topic

Last ½ hour: Quiz, Homework, and then eat meals, complete survey and student input

Week 9 - Design of Solar Cookers – Dec 15, 2018

Objectives: Students will review and critique solar cookers made by themselves and classmates. They are to bring their “homemade” solar cooker to class and summarize strengths and weaknesses of various designs.

Lab: 1st 15 minutes prepare macaroni and cheese using the sport and Roche solar oven to bake outside.

10 minutes for summary of last week

5 minutes for quiz on today topic

Lecture: 1 hour to make a cook it solar oven or a Roche cooker

Guest speaker: Paul

Last ½ hour: Quiz, Homework, and then eat meals, complete survey and student input

Week 10 - Self Help Group, Promoting Solar Cooking Frequently Asked Questions –Dec 22, 2018

Objectives: at the end of the class students will be able to define self-help group and how to start one

Lab: 1st 10 minutes: Prepare corn meal with herrings and it in the sun to cook.

5 minutes for Summary of week 9 in 5 minutes

10 minutes for a quiz on self-help groups

Lecture: ½ hour Lecture on the quiz follow by 35 discussions on how to make a self-help group.

Guest Sophie

Last ½ hour: quiz, eating and next week assignment

Watch video at home before class: <https://www.youtube.com/watch?v=I5ZiDTsMAE8>

Week 11 -, water, milk pasteurization – January 12, 2019

Objectives: at the end of the class students will be able to name some of the most important solar cooking projects, manufacturers and sellers

Lab: 1st 10 minutes: Prepare corn meal, beef legume and place in the sun to cook.

5 minutes for Summary of week 10

Lecture: ½ hour Lecture on the quiz follow by ½ hour discussion on this week topic. Divide in group of five to write a solar project in 10 minutes then discuss projects and provide feedback

Guests: Solar Sisters - Jennifer Gasser and Mary B

Last ½ hour: quiz, eating and next week assignment

Week 12 - Entrepreneurship: Local Business or Start-Up Success – January 19, 2019

Objectives: at the end of the class students will be able to draw a business plan, define entrepreneurship and start up a business

Lab: 1st 10 minutes: Prepare bread and placed it in the sun to bake

Summary of week 11 in 5 minutes

Lecture: ½ hour Lecture on the quiz follow by ½ hour discussion on this week topic.

Guests: Jennifer Gasser

Entrepreneurship: local business or start up success.

Last ½ hour: quiz, eating and next week assignment, complete survey and student input

Week 13 - Most Important Solar Cooking Projects and Emergency Preparedness –January 26, 2019

Objectives: at the end of the class students will be able to learn how to succeed in business and prepare for emergency

Lab: 1st 10 minutes: Prepare a meal of choice and place it in the sun to cook

5 minutes for Summary of week 12

Lecture: ½ hour Lecture on discussion on the quiz follow by ½ hour discussion on self-help group project and business

Last ½ hour: quiz, eating and next week assignment

Guest: Mary B/Rose B

Week 14 - Promote Solar Cooking – February 2, 2019

Objectives: at the end of the class students will be able to promote solar cooking as a new product and service

Lab: 1st 10 minutes: Prepare a meal of choice and place it in the sun to cook

5 minutes for Summary of week 13

Lecture: ½ hour Lecture on discussion on the quiz follow by ½ hour discussion on emergency preparedness and promotion of solar cooking.

Last ½ hour: quiz, eating and next week assignment. Complete survey and student input

Guest: Martha Port.

Week 15 – Final Exam – February 9, 2019

Accumulative exam includes topics of weeks 1- 14 is 20% of your grade. It will be 50 questions consist of multiple choices, fill in the blanks and short answers). Biogas and Solar Cookers Committee will make the questions and the curriculum committee will revise the test before administer.

Final grade: Students will receive grade as per university protocol