

REGISTRATION

Hands-on Short Course on Bioethanol Production and Utilization

Date: Flexible

(Please Type or Print Clearly) Name: _____

This name will appear on your certificate of Training

Title: _____

Company: _____ Mailing

Address: _____

City: _____ State: _____ Zip

Code: _____ Country: _____

Phone: _____ Fax: _____ E-

mail: _____

Name Card (you would like to be called): _____

Name and phone number to contact in case of emergency: _____

The registration fee per person is US \$1,500. Participants must inform BETA Lab of preferred exact dates of training program. Applications are accepted under the terms described in the accompanying short course program or a revised program agreed upon by participant and BETA Lab. Payment by check drawn on a U.S. bank or an International cashier's check in U.S. dollars must accompany applications.

Method of Payment (mark one)

Checks payable to Texas A&M AgrLife Research.

If paying with credit card please include type of card:

American Express Visa Master Card Diners Club

Card Number: _____

Name of Card Holder: _____ Exp. Date: _____

Signature: _____ Total Amount: \$ _____

Mail or fax this application to:

Cheryl Yeager
Business Coordinator
Biological and Agricultural Engineering Department (BAEN)
Texas A&M University
College Station, Texas 77843-2476 U.S.A.
Tel: 979-845-3994; Fax: 979-845-3936
E-mail: business@baen.tamu.edu

Hands-on Short Course on Bioethanol Production and Utilization (1 Week)

Prepared and Organized by the BioEnergy Testing and Analysis Lab (BETA Lab)
Biological and Agricultural Engineering Department
College of Agriculture and Life Sciences (COALS)
Texas A&M University
College Station, TX 77843-2476 U.S.A.

Training Pedagogy

This training program is a combination of Lectures and Computational Exercises in the morning and actual hands-on exercises in the afternoon. Each training lecture is loaded with engineering calculations and the chemistry of bioethanol production. At the end of the training program, the trainee will have learned all basic skills in becoming a bioethanol plant manager or process engineer. The trainee will also receive a hardcopy of complete set of training materials.

Schedule of Lectures/Computations and Lab Activities

Sunday or Day 0, Arrival of Trainee

Monday or Day 1

Morning Activities

Tour of Lab Facilities of Overview of Training Program

Lecture 1: Overview of Bioethanol Production from Sugar, Starchy and Ligno-cellulosic Crops

Lecture 2: Feedstock for Making Bioethanol

Computation 1: Chemistry Computations and Yield Prediction and Sizing of Plants

Afternoon Activities

Lab 1: Bioethanol Production from Fruit Juices Lab Exercise

Tuesday or Day 2

Morning Activities

Lecture 3: Equipment and Instruments Required for Bioethanol Production

Lecture 4: Design of Bioethanol Plants and Performance Evaluation

Computation 2: Reactor Design Calculations

Afternoon Activities

Lab 2: Measurement of Sugars, Carbohydrates and Lignin

Wednesday or Day 3

Morning Activities

Lecture 5: Compositional Analysis of Bioethanol Production: NREL Protocol

Lecture 6: Analysis of Sugars and Ethanol Using High Performance Liquid Chromatography (HPLC)

Computation 3: Chemistry of Bioethanol Production from Sugars and Starch: Energy and Mass Balances

Afternoon Activities

Lab 3: NER and BEB Calculations Including Life Cycle Analysis Using GREET Software

Thursday or Day 4

Morning Activities

Lecture 7: Equipment and Technology for Bioethanol Production:

Lecture 8: Advanced Bioethanol Production Processes

Computation 4 Equipment Design and Control Systems Introduction

Afternoon Activities

Lab 4: Operation of State-of-the Art Fermentor and HPLC

Friday or Day 5

Morning Activities

Lecture 9: Strategies for the Establishment of Small and Medium-Scale Biofuels Plant

Lecture 10: Design of Commercial Systems and Economics of Bioethanol Production

Computation 5: Development of Business Plan and Simple Economic Calculations and Projections

Including SAE Standards for Engine Testing

Afternoon Activities

Lab 5: Engine Performance Testing and Emissions

Saturday or Day 6

Field Visit and Tour:

- a. Visit a Commercial Biofuel Facility (Dayton, Texas)
- b. Awarding of Certificates

Summary of Training

Time	Day of the Week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
AM	Arrival of Trainee	Tour/Lect 1	Lecture 3	Lecture 5	Lecture 7	Lecture 9	Tour of Commercial Facility
		Lecture 2	Lecture 4	Lecture 6	Lecture 8	Lect 10	
		Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	
		Lunch Break					
PM		Lab 1 Bioethanol Production	Lab 2 Sugar, Starch Measurement	Lab 3 NER, NEB and GREET	Lab 4 Fermentor and HPLC	Lab 5 Engine Testing	Awarding and Trainee Departure

For additional technical information, write, call, fax or e-mail to:

Dr. Sergio C. Capareda

Head, BioEnergy Testing and Analysis Lab

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