

Register on the web:  
[www.tamu.edu/extrusion](http://www.tamu.edu/extrusion)

## Objectives and Instructors

### OBJECTIVES OF SHORT COURSE

- Train production personnel in principles and characteristics of extruders and support systems for effective selection and operation.
- Review current practices for preparation of aquaculture feeds.
- Demonstrate equipment in operation, and familiarize attendees with practical aspects of feeds extrusion.
- Review of the aquaculture nutrition and feed management practices.

### LOCATION AND FACILITIES

All lectures will be held at Rudder Tower on the Texas A&M University Campus. College Station temperatures in late September are in the 69-91°F (21-33°C) range. Participants will be taken by bus to Riverside Campus, and to Cater-Mattill Hall (TAMU Campus) for afternoon demonstrations. Translation equipment is available by prior arrangements for organized groups willing to provide their own translators.

### SHORT COURSE CONDUCT

All Short Course sessions will be informal. Questions are encouraged during the lectures, breaks, and social periods. Rights to cancel this course with refund or to substitute speakers and change schedules, as necessary to expedite the course, are reserved. Texas A&M University System policy does not allow inclusion of alcoholic beverages in registration fees. Cash bars will be available.

### TRANSPORTATION

College Station is easily reached by about 10 flights daily. From Dallas/Ft. Worth International Airport connect via American Airlines (American Eagle Commuter). From Houston Intercontinental Airport connect via Continental Airlines (Continental Express). The College Station Airport code is CLL. Participants should call the Hilton hotel (693-7500) upon arrival at Easterwood Airport for courtesy van service.

### ACCOMMODATIONS

Reservations for lodging should be made directly by attendee. A block of rooms has been reserved at the College Station Hilton and Conference Center for short course participants at the special rate of \$91/night plus tax for single or double occupancy. Ask for the rate specifically and mention the Group Code AQUA. Hotel reservations must be received before August 29, 2009 in order to get special rates. You can make your reservation by telephone, fax, or on the internet.

College Station Hilton & Conference Center  
801 University Drive East  
College Station, Texas 77840 USA  
Tel: 979/693-7500; Fax: 979/260-1931  
[www.hiltoncs.com](http://www.hiltoncs.com)

When faxing or emailing hotel reservations, please include a credit card number to confirm your reservation, and also include your departure and arrival dates.

### REGISTRATION

Registration fee for the short course and pilot plant demonstrations is \$1,595 and includes Sunday evening mixer, daily lunches, refreshments at breaks, local transportation, a short course eBook manual and certificates of completion.

There is a 10% discount if three or more individuals from the same organization register for the short course. Academic discounts may be applicable if space is available.

Make checks payable to TEES (Texas Engineering Experiment Station) and mail to TEES Fiscal Office, 3124 TAMU, College Station, TX 77843-3124. You may pay the fee by credit card (American Express, Visa or Master Card). **Registration fees are not refundable**, but substitute personnel may be sent by the same firm. Mail the registration form and a copy of your check to Cyndi Casanova, Short Course Coordinator (See address on registration application form). Space is limited; therefore, applications will be accepted on a first-come, first-serve basis.

You can also register on the web:  
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### INSTRUCTORS

Mr. Michael Bachelor, Solution Architect, Bachelor Controls Inc.  
Mr. Ray Bachelor, President, Bachelor Controls, Inc.  
Dr. Christopher Bailey, Professor, Poultry Science Department, Texas A&M University  
Mr. Tom Barber, Regional Director, Americas, Bühler Aeroglide Corporation  
Dr. Donnie Campbell, Senior Professional Service Manager, DSM Nutritional Products, Inc.  
Mr. Chad Cook, Sales, Bliss Industries, Inc.  
Dr. Michael Cremer, Aquaculture Technical Director, U. S. Soybean Export Council  
Mr. Phil Erickson, International Application Engineer, Reynolds Engineering & Equipment, Inc.  
Dr. Delbert Gatlin, III, Professor, Department of Wildlife and Fisheries Sciences, Texas A&M University  
Mr. Gerry Hertzler, Technical Service, Wenger Manufacturing Company  
Mr. Joe Kearns, Aquaculture Process Engineering Manager, Wenger Manufacturing Company  
Dr. Addison Lawrence, Professor, Senior Faculty Fellow, Regent Fellow, Texas A&M University  
Mr. Gerald M. Leukam, Senior Vice President, Technical Operations, T.E. Ibberson Company  
Mr. Chris Mack, Research Associate, Extrusion Technology Program, Food Protein R&D Center  
Mr. Jim Mann, Technical Services Manager, Kemin Nutriscience, Inc.  
Mr. Brian S. Marlow, Founder and Chief Technical Officer, III Sigma  
Mr. Hennie Pieterse, Vice President, Engineering & Operations, Insta-Pro International  
Dr. Mian N. Riaz, Head, Extrusion Technology Program, Food Protein R&D Center  
Mr. Galen Rokey, Technical Center Manager, Wenger Manufacturing Company  
Dr. Nabil W. Said, Vice President, Nutrition & Extrusion Technologies, Insta-Pro International  
Mr. Jim Schulte, Feed Milling Technician, UAS Canada Inc.  
Mr. Terry Stemler, Vice President of Sales, Automated Process Equipment Corp. (APEC)  
Mr. Maurice Williams, Director of Research & Development, Anderson International Corp.

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### Upcoming Practical Short Courses For details, visit [www.tamu.edu/extrusion](http://www.tamu.edu/extrusion)

Texturized Vegetable Protein  
& Other Soy Products  
August 23 - 28, 2009

Feeds & Pet Food Extrusion  
January 31 - February 5, 2010

Snack Food Processing:  
Extruded Snacks & Tortilla Chips  
March 7-12, 2010



The Extrusion Pilot Plant at Texas A&M University is available for contract research.

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

Dr. Mian N. Riaz  
Food Protein R&D Center  
2476 TAMU, The Texas A&M University System  
College Station, Texas 77843-2476  
U.S.A.  
Tel: 979/845-2774; Fax: 979/845-2744  
Email: [mnriaz@tamu.edu](mailto:mnriaz@tamu.edu)



Extrusion Technology Program  
Food Protein Research and Development Center  
The Texas A&M University System  
2476 TAMU, 373 Olsen Blvd., Cater-Mattill Hall  
College Station, TX 77843-2476 U.S.A.

Organized by the

Food Protein Research & Development Center  
Texas Engineering Experiment Station  
The Texas A&M University System  
Artie McFerrin Department of Chemical Engineering  
College Station, Texas 77843-2476 U.S.A.

In cooperation with

Department of Wildlife and Fisheries Sciences  
Texas Agricultural Experiment Station  
The Texas A&M University System  
College Station, Texas 77843-2476 U.S.A.

Aquaculture Feed Extrusion,  
Nutrition, & Feed Management  
September 20 - 25, 2009

16<sup>th</sup> Annual Practical Short Course on

NONPROFIT ORG.  
U.S. POSTAGE  
PAID  
COLLEGE STATION,  
TEXAS 77843  
PERMIT NO. 215

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## Short Course Lectures

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## Registration Application

### Sunday, September 20, 2009

6:00 PM Registration, Hilton Hotel  
6:30 PM Welcome Introduction and Announcements - Mian N. Riaz  
7:00 PM Social / Mixer with Cash Bar, Hilton (optional)

### Monday, September 21, 2009

7:40 AM Bus Leaves Hotel for Rudder Tower, Texas A&M University  
8:00 AM "Introduction to Extrusion" - Mian N. Riaz  
9:00 AM "Material Handling: Scalping, Magnetic Protection, Product Conveyance, Dust Control, Weighing, Mixing, Coating, Material Flow & Distribution, Hybrid Batching" and "Slipform Construction"- Gerald M. Leukam  
10:30 AM Break  
10:45 AM "Material Handling: Scalping..." Continued - Gerald M. Leukam  
11:45 AM [Group Photo](#)  
12:00 PM Lunch  
1:00 PM "Principles of Dry Extrusion and Its Application in Aquatic Feed and Pet Food" - Hennie Pieterse  
1:45 PM "Dry Extrusion of Full Fat Soy and Partially Defatted Soybean Meal" - Nabil W. Said  
2:30 PM Break  
2:45 PM "An Overview of Soy in Aquaculture Diets" - Michael Cremer  
3:30 PM "Other Commercial Applications of Dry Extrusion" - Nabil W. Said  
4:15 PM [Bus leaves for FPRDC for Multiple Demonstrations:](#)  
[1. Full Fat Soy Using Whole Soybeans with a Dry Extruder - Chris Mack](#)  
[2. Full Fat Soy Using Dehulled Soybeans with a Dry Extruder - Chris Mack](#)  
[3. Fisheries By-Products Recycling with a Dry Extruder - Chris Mack](#)

### Tuesday, September 22, 2009

7:40 AM Bus Leaves Hotel for Rudder Tower, Texas A&M University  
8:00 AM "Principles of Aquaculture Nutrition - Part 1" - Delbert Gatlin  
9:15 AM "Optimizing Aqua Feed Quality: Oxidation Control, Microbial Growth Control, and Palatability" - Jim Mann  
10:15 AM Break

10:30 AM "Continuous Spray and Coating Systems"- Terry Stemler  
11:00 AM "Common Grinding Problems" - Chad Cook  
11:45 AM Lunch  
1:00 PM "Commercial Vitamin Product Forms, Vitamin Premixes and Their Performance in Aquatic Feed" - Donnie Campbell  
2:00 PM "Ultra Fine Grinding for Aquatic Feed" - Phil Erickson  
2:30 PM Break  
2:45 PM "Characteristics and Applications of Interrupted Flight Expanders" - Moe Williams  
3:30 PM "Preparation of Aquaculture Feeds" - Moe Williams  
4:00 PM [Bus Leaves for Riverside Campus for Multiple Demonstrations:](#)  
[1. Aquatic Feed Using Interrupted Flight Expander - Moe Williams and Chris Mack](#)  
[2. Full Fat Soy Using Interrupted Flight Expander - Moe Williams and Chris Mack](#)  
[3. Coating Systems for Aquaculture Feed - Terry Stemler](#)

### Wednesday, September 23, 2009

7:40 AM Bus Leaves Hotel for Cater-Mattil Hall - Texas A&M University  
8:00 AM "Detour to FPR&DC to Inspect Single and Twin-Screw Extruders" - Cater-Mattil Hall, Wenger Associates  
8:45 AM "Ingredients and Recipe Considerations" - Galen Rokey  
9:45 AM Break  
10:00 AM "Preconditioning Technology" - Gerry Hertzl  
10:45 AM "Single and Twin Screw Extruders and Applications in Aqua Feed" - Joe Kearns  
11:45 AM Lunch  
1:00 PM "High Fat Extrusion and Product Densification" - Galen Rokey  
1:45 PM "Drying and Cooling Systems for Aqua Feed" - Tom Barber  
2:45 PM Break  
3:00 PM "Products Analysis Lab" - Galen Rokey and Joe Kearns  
3:45 PM "Enhanced Process Control Through Moisture and Bulk Density Monitoring" - Brian S. Marlow  
4:30 PM [Bus Leaves for FPRDC for Multiple Demonstrations:](#)  
[1. Floating Catfish Feed Using Single Screw Extruder - Galen Rokey](#)  
[2. Ultra-Fine Fish Feed Using Twin Screw Extruder - Gerry Hertzl](#)  
[3. Automated On-line Monitoring System for Moisture and Bulk Density - Brian S. Marlow](#)

### Thursday, September 24, 2009

7:40 AM Bus Leaves Hotel for Rudder Tower, Texas A&M University  
8:00 AM "Automated Control of Extrusion System" - Ray Bachelor and Michael Bachelor  
9:00 AM "Principles of Aquaculture Nutrition - Part 2" - Delbert Gatlin  
10:00 AM Break  
10:15 AM "Die Technology" - Gerry Hertzl  
11:00 AM "Vacuum Infusion Coating Principles for Aquatic Feed" - Jim Schulte  
11:45 AM [Graduation Lunch](#)  
1:15 PM "Extrusion Processing Technologies" - Galen Rokey  
2:15 PM "Micro-Aquatic Feed" - Joe Kearns  
2:45 PM Break  
3:00 PM "Ensuring a Smoothly Running Extruder"- Galen Rokey  
4:00 PM [Bus Leaves for FPRDC for Multiple Demonstrations:](#)  
[1. Salmon Feed for Vacuum Infusion Using a Single Screw Extruder - Galen Rokey](#)  
[2. High Fat Yellow Tail Feed Using a Twin Screw Extruder - Gerry Hertzl](#)  
[3. Vacuum Infusion System - Jim Schulte](#)

### Friday, September 25, 2009

7:40 AM Bus Leaves Hotel for Rudder Tower, Texas A&M University  
8:00 AM "Odor Control in a Aquafeed Plant"- Jim Schulte  
8:45 AM "Shrimp Feed Management and Feed Physical Characteristics" - Addison Lawrence  
10:15 AM Break  
10:30 AM "Least Cost Feed Formulation" - Chris Bailey  
11:30 AM Wrap-Up - Mian N. Riaz and Delbert Gatlin  
11:45 AM Bus Leaves for Hotel  
1:30 PM Optional Tour of Texas A&M University's Aquaculture Facilities - Delbert Gatlin (Leave from Hilton)

Practical Short Course on  
Aquaculture Feed Extrusion,  
Nutrition, & Feed Management  
September 20 - 25, 2009  
Texas A&M University  
(Please Type or Print Clearly)

Name: \_\_\_\_\_  
This name will appear on your graduation diploma

Job Title: \_\_\_\_\_

Company: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_

Zip Code: \_\_\_\_\_ Country: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name Card (you would like to be called): \_\_\_\_\_

Contact in case of emergency: \_\_\_\_\_

List any special diet requirements: \_\_\_\_\_

Method of Payment (mark one)

Checks payable to TEES

If paying with credit card please include type of card:

American Express  Visa  Master Card  Diners Club

Number: \_\_\_\_\_

Exp. Date: \_\_\_\_\_ Total Amount: \$ \_\_\_\_\_

Signature: \_\_\_\_\_

Return this application to:

Cyndi Casanova, Short Course Coordinator  
Food Protein R&D Center  
The Texas A&M University System  
2476 TAMU, 373 Olsen Blvd., Cater-Mattil Hall  
College Station, Texas 77843-2476 U.S.A.  
Tel: 979/847-8997; Fax: 979/845-2744  
E-mail: [shortcourse@tamu.edu](mailto:shortcourse@tamu.edu)

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