



Extrusion Processing Short Course
November 15th and 16th, 2017
School of Food Science, FSHN 103/155

Tentative

Program Schedule -Day 1

- 7.30 a.m. to 8.00 a.m. Check-in or Onsite Registration
- 8.00 a.m. to 8.15 a.m. **Introductions and Kick-off**
- 8.15 a.m. to 9.00 a.m. Overview of Extrusion Processing
Girish Ganjyal, Ph.D., Washington State University, Pullman, WA
- 9.00 a.m. to 9.50 a.m. Biopolymers and Product Development with Extrusion Processing
Girish Ganjyal, Ph.D., Washington State University, Pullman, WA
- 9.50 a.m. to 10.00 a.m. **Break (10 min)**
- 10.00 a.m. to 11.00 a.m. Sensory Analysis of Extruded Products
Carolyn F. Ross, Ph.D., Washington State University, Pullman, WA
- 11.00 a.m. to 12.00 a.m. Lab Session: Extruder and Extruder Parts (FSHN 289)
Ryan J. Kowalski, Ph.D., PGP International, Woodland, CA
and Bon-Jae Gu, Washington State University, Pullman, WA
- 12.00 p.m. to 1.00 p.m. **Lunch (Provided)**
- 1.00 p.m. to 2.00 p.m. Extruder Screws and Dies
Ryan J. Kowalski, Ph.D., PGP International, Woodland, CA
- 2.00 p.m. to 3.30 p.m. Physico-chemical Characteristics of Raw Materials and Extrusion
Jane Bock, Ph.D., C.W. Brabender Instruments, South Hackensack, NJ
Girish Ganjyal, Ph.D., Washington State University, Pullman, WA
- 3.30 p.m. to 3.40 p.m. **Break (10 min)**
- 3.40 p.m. to 5.00 p.m. Twin-Screw Extruders and Scale-up
Jenni Harrington, Buhler Inc., Plymouth, MN



Program Schedule

Day 2

- 8.00 a.m. to 8.30 a.m. Overview of the Practical Sessions
*Ryan J. Kowalski, Ph.D., PGP International, Woodland, CA
and Bon-Jae Gu, Washington State University, Pullman, WA*
- 8.30 a.m. to 12.00 p.m. Lab Sessions (FSHN 212 and 289)
*Ryan J. Kowalski, Ph.D., PGP International, Woodland, CA
and Bon-Jae Gu, Washington State University, Pullman, WA*
- 12.00 p.m. to 1.00 p.m. **Lunch (Provided)**
- 1.00 p.m. to 2.15 a.m. Discussion of the Practical Sessions
All Attendees, Washington State University, Pullman, WA
- 2.15 p.m. to 2.50 p.m. Ingredients in Extrusion Processing I
Girish Ganjyal, Ph.D., Washington State University, Pullman, WA
- 2.50 p.m. to 3.00 p.m. **Break (10 min)**
- 3.00 p.m. to 4.20 p.m. Post Extrusion Operations (Cutting, Drying, Coating etc)
*Ryan J. Kowalski, Ph.D., PGP International, Woodland, CA
Dave Reynolds, Buhler Inc., Plymouth, MN*
- 4.20 p.m. to 4.45 p.m. Ingredients in Extrusion Processing II
Girish Ganjyal, Ph.D., Washington State University, Pullman, WA
- 4.45 p.m. to 5.00 p.m. Wrap-up (CEU's; Attendance Certificates; Evaluations)
Girish Ganjyal, Ph.D., Washington State University, Pullman, WA

PS: There may be minor changes in the schedule.

Course Introduction

Extrusion is a very common processing technology used in the food industry to produce direct expanded snack foods, cereals, and pet foods, among other products. Extruded products are typically made by utilizing raw materials, often flours, and subjecting them to high temperatures while also creating a high shear and high-pressure environment using rotating screws.

This introductory course will provide information about the extrusion processing systems, extruder parts, extruder screws and dies, food ingredient functionality and food product development with extrusion. The course will provide practical examples of product development with extrusion using various food ingredients.

Registration Fee: \$325/attendee. For registration questions contact Cathy Blood (blood@wsu.edu). Class size is limited to 24 people.

Continuing Education Units (CEU's) credits will be available for this course. A short test will be given at the end of the course, which the students will have to score a minimum of 70% to receive the CEU's credit.