Functional Starch and Carbohydrate Modification Training Course

Professional Development Training Course Outline

Category	Food processing and Technology	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

The global food and nutrition industry is rapidly evolving, with an increasing focus on functional starches and carbohydrate modification to improve food quality, texture, shelf life, and nutritional value. As health-conscious consumers demand innovative and sustainable food solutions, companies must adapt through advanced knowledge and practical applications of starch and carbohydrate science. Functional Starch and Carbohydrate Modification Training Course is designed to provide in-depth technical training with SEO-friendly keywords such as starch modification, functional carbohydrates, resistant starch, enzymatic treatment, food processing innovation, dietary fiber enrichment, and food product development.

Functional starch and carbohydrate modification is vital in industries such as food manufacturing, pharmaceuticals, packaging, and nutrition science. This training explores modification techniques, structural behavior, industrial applications, and case studies to equip participants with both theoretical and practical expertise. By integrating applied science with industrial case examples, participants will gain critical skills for improving product innovation, enhancing nutritional quality, and ensuring competitiveness in the global market.

Programme Curriculum

Functional Starch and Carbohydrate Modification Training Course

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Carbohydrate Modification Training Course is designed to provide in-depth technical training in starch modification, functional carbohydrates, resistant starch, enzymatic treatment, food processing innovation, dietary fiber enrichment, and food product development.

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Course Objectives

1. Understand the fundamentals of starch modification and carbohydrate science.
2. Explore enzymatic modification techniques for functional food applications.
3. Examine chemical modification of starches for industrial uses.
4. Study physical modification methods including extrusion and heat treatments.
5. Analyze resistant starch and its role in gut health and dietary fiber.
6. Evaluate carbohydrate-based fat replacers and sugar substitutes.
7. Learn the applications of starch in food texturization and stability.
8. Apply carbohydrate modification in pharmaceutical and nutraceutical sectors.
9. Investigate bio-based packaging using modified starches.
10. Understand sustainability and clean-label strategies in starch modification.
11. Gain hands-on knowledge of industrial processing and formulation.
12. Develop research and innovation skills in carbohydrate chemistry.
13. Interpret global market trends in functional starch and carbohydrates.

Organizational Benefits

- Enhanced employee expertise in carbohydrate chemistry.
- Improved product development for food and nutrition markets.
- Increased competitiveness in functional foods sector.
- Adoption of innovative starch applications.
- Strengthened R&D capability.
- Reduction in costs through optimized formulations.
- Enhanced sustainability and clean-label compliance.
- Increased consumer satisfaction with innovative products.

- Expansion into nutraceutical and pharmaceutical markets.
- Strengthened global partnerships through advanced product portfolios.

Target Audiences

1. Food technologists
2. Nutrition scientists
3. Pharmaceutical researchers
4. Product developers
5. Quality assurance specialists
6. Food packaging experts
7. Research and development teams
8. Academic researchers

Course Duration: 10 days

Course Modules

Module 1: Fundamentals of Starch and Carbohydrate Science

- Introduction to starch structure and classification
- Types of carbohydrates and industrial relevance
- Digestibility and functional characteristics
- Nutritional importance of starch and carbohydrates
- Industrial applications overview
- Case study: Structural behavior of native starches in food matrices

Module 2: Enzymatic Modification Techniques

- Principles of enzymatic hydrolysis
- Amylases and glucosidases in starch processing
- Conversion to syrups and maltodextrins
- Functional improvements through enzymatic action
- Application in brewing and confectionery
- Case study: Enzyme-modified starch for low-GI food production

Module 3: Chemical Modification of Starches

- Cross-linking and substitution methods

- Oxidized and acetylated starches
- Stability improvements under processing conditions
- Thickening and gelling applications
- Clean-label alternatives to chemical methods
- Case study: Modified starches in instant soups and sauces

Module 4: Physical Modification Methods

- Heat-moisture treatment
- Extrusion cooking for starch transformation
- Pregelatinization techniques
- Particle size reduction and granule modification
- Industrial relevance of physical treatments
- Case study: Physically modified starch in bakery industry

Module 5: Resistant Starch and Dietary Fiber

- Classification of resistant starch types
- Role in gut microbiota and colon health
- Production methods for resistant starch
- Nutritional labeling and health claims
- Application in functional foods
- Case study: Resistant starch in diabetic-friendly products

Module 6: Carbohydrate-Based Fat Replacers

- Principles of fat replacement in food systems
- Starch-derived fat mimetics
- Functional and sensory considerations
- Impact on calorie reduction
- Market applications in dairy and baked goods
- Case study: Fat replacers in low-calorie desserts

Module 7: Sugar Substitutes and Polyols

- Starch-derived sugar substitutes
- Polyols and health impacts

- Glycemic index considerations
- Sensory evaluation of sweeteners
- Applications in beverages and confectionery
- Case study: Polyol-based sugar substitutes in sugar-free candies

Module 8: Starch in Food Texturization and Stability

- Gelling and thickening agents
- Stabilization of emulsions
- Freeze-thaw stability improvements
- Control of syneresis in processed foods
- Industrial formulation practices
- Case study: Starch-based thickeners in dairy products

Module 9: Starch Applications in Pharmaceuticals

- Starch as an excipient
- Disintegrants and binders in tablets
- Film-forming applications
- Modified starch in drug delivery systems
- Nutraceutical applications
- Case study: Starch-based drug delivery in sustained release

Module 10: Starch in Bio-based Packaging

- Biodegradable films from starch
- Blending with polymers for strength
- Applications in sustainable packaging
- Environmental benefits
- Commercial viability challenges
- Case study: Starch-based packaging in food supply chains

Module 11: Sustainability in Starch Modification

- Green chemistry in starch modification
- Clean-label innovations

- Waste valorization from starch industries
- Renewable resource utilization
- Regulatory perspectives
- Case study: Eco-friendly starch modification in Europe

Module 12: Industrial Processing and Formulation

- Scale-up considerations
- Processing equipment for modification
- Industrial formulation practices
- Quality assurance in production
- Standardization methods
- Case study: Scaling up resistant starch production in Asia

Module 13: Innovation in Carbohydrate Chemistry

- Novel carbohydrate modification technologies
- Genetic engineering approaches
- Advances in resistant starch development
- Application in functional beverages
- Future research directions
- Case study: Nanostructured carbohydrate applications

Module 14: Global Market Trends

- Consumer demand for functional foods
- Growth in nutraceutical markets
- Regional trends in carbohydrate innovation
- Impact of health regulations
- Competitive strategies of major companies
- Case study: Market penetration of resistant starch in North America

Module 15: Applied Case Integration

- Cross-industry applications of modified starch
- Best practices for R&D and innovation
- Collaboration between academia and industry

- Product development success stories
- Strategic business positioning
- Case study: Integrated functional starch solutions in multinational companies

Training Methodology

- Interactive lectures with multimedia support
- Case study analysis and group discussions
- Hands-on practical demonstrations
- Industry expert guest lectures
- Research-based assignments
- Real-time industrial problem-solving sessions

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

Ready to enroll or request a customized program? Book online or contact us:

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