

BIOENERGY TECHNOLOGY • BIOETHANOL & BIOFUEL SKILL DEVELOPMENT



NTHRYS
OPC PVT LTD



Bioethanol & Fuel Fermentation Industrial Manufacturing Training Programs

A complete industrial catalogue of hands-on biofuel fermentation training modules — from distiller's yeast to second-generation bioethanol.

60

PROGRAMS

10

CATEGORIES

2026

EDITION

Program Categories at a Glance

This catalogue lists every bioethanol and biofuel fermentation module our training programs are equipped to teach, organised into 10 technology streams. Each program carries a unique product code for easy reference, enrolment and certification.

STREAM	CATEGORY FOCUS	DESCRIPTION	COUNT
NBE-YE	Ethanol Fermentation Yeasts	Distiller's & high-performance yeast production	7
NBE-SO	Specialty & Non-Conventional Ethanol Organisms	Zymomonas, pentose & thermophilic producers	6
NBE-EZ	Saccharification & Process Enzymes	Amylase, glucoamylase & cellulase production	6
NBE-1G	First-Generation Feedstock Processing	Molasses, grain & juice ethanol processing	7
NBE-2G	Second-Generation (Lignocellulosic) Processing	Biomass pretreatment, SSF & CBP processing	6
NBE-AB	Advanced & Alternative Biofuels	Biobutanol, biohydrogen & syngas fermentation	6
NBE-NU	Fermentation Nutrients & Yield Enhancers	Yeast nutrient, micronutrient & yield additives	5
NBE-PA	Contamination Control & Process Aids	Antibacterial, antifoam & sanitation aids	5
NBE-CP	Co-Products & By-Product Valorization	DDGS, spent-wash, CO2 & yeast-biomass recovery	6
NBE-FT	Propagation, QC & Formulation Technology	Yeast propagation, drying, banking & assay methods	6
Total training programs			60

HOW TO READ A CODE

NBE – YE – 01

NBE Nthrys Bioethanol Program YE Category stream 01 Program number

CODE	TRAINING PROGRAM	DESCRIPTION
NBE-YE-01	Distiller's Yeast (<i>S. cerevisiae</i>)	Standard ethanol-fermenting yeast.
NBE-YE-02	Thermotolerant Yeast	High-temperature fermentation yeast.
NBE-YE-03	High-Ethanol-Tolerant Yeast	High-gravity fermentation yeast.
NBE-YE-04	Osmotolerant Yeast	High-sugar molasses yeast.
NBE-YE-05	Flocculating Yeast	Self-settling recovery yeast.
NBE-YE-06	Turbo Yeast Blend	Nutrient-fortified fast yeast.
NBE-YE-07	Active Dry Distiller's Yeast	Shelf-stable dried yeast.

CODE	TRAINING PROGRAM	DESCRIPTION
NBE-SO-01	Zymomonas mobilis	High-yield bacterial ethanol producer.
NBE-SO-02	Pentose-Fermenting Yeast	Xylose-fermenting Scheffersomyces.
NBE-SO-03	Kluyveromyces (Whey)	Lactose-fermenting ethanol yeast.
NBE-SO-04	Thermophilic Ethanol Bacteria	Heat-active ethanol producer.
NBE-SO-05	Co-Fermenting Strain	C5 + C6 co-fermentation culture.
NBE-SO-06	Engineered Ethanol Strain	Improved-yield recombinant strain.

03

CATEGORY • NBE-EZ

Saccharification & Process Enzymes

Amylase, glucoamylase & cellulase production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBE-EZ-01	Alpha-Amylase	Starch-liquefying enzyme.
NBE-EZ-02	Glucoamylase	Saccharifying enzyme.
NBE-EZ-03	Cellulase	Cellulose-hydrolysing enzyme.
NBE-EZ-04	Hemicellulase / Xylanase	Hemicellulose-hydrolysing enzyme.
NBE-EZ-05	Pullulanase	Debranching enzyme.
NBE-EZ-06	Cellulosic Enzyme Cocktail	Combined 2G hydrolysis blend.

04

CATEGORY • NBE-1G

First-Generation Feedstock Processing

Molasses, grain & juice ethanol processing

7

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBE-1G-01	Molasses Fermentation	Cane-molasses ethanol process.
NBE-1G-02	Sugarcane-Juice Fermentation	Direct cane-juice process.
NBE-1G-03	Maize / Corn Fermentation	Grain dry-mill process.
NBE-1G-04	Broken-Rice Fermentation	Rice-starch ethanol process.
NBE-1G-05	Sweet-Sorghum Fermentation	Sorghum-juice process.
NBE-1G-06	Damaged-Food-Grain Process	Surplus-grain ethanol process.
NBE-1G-07	Tapioca / Cassava Process	Starchy-tuber ethanol process.

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CATEGORY • NBE-2G

Second-Generation (Lignocellulosic) Processing

Biomass pretreatment, SSF & CBP processing

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBE-2G-01	Biomass Pretreatment Process	Pretreatment & detoxification.
NBE-2G-02	Bagasse-to-Ethanol Process	Sugarcane-bagasse 2G process.
NBE-2G-03	Rice-Straw-to-Ethanol Process	Paddy-straw 2G process.
NBE-2G-04	Cotton-Stalk / Woody Process	Woody-biomass 2G process.
NBE-2G-05	SSF Process Culture	Simultaneous saccharification-fermentation.
NBE-2G-06	Consolidated Bioprocessing Culture	One-pot CBP culture.

06

CATEGORY • NBE-AB

Advanced & Alternative Biofuels

Biobutanol, biohydrogen & syngas fermentation

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBE-AB-01	Biobutanol (ABE) Culture	Clostridium ABE fermentation.
NBE-AB-02	Biohydrogen Culture	Dark-fermentation H2 culture.
NBE-AB-03	Syngas-Fermentation Culture	Acetogen gas-to-fuel culture.
NBE-AB-04	Isobutanol Strain	Branched-alcohol producer.
NBE-AB-05	Algal Biofuel Culture	Lipid-rich microalgal culture.
NBE-AB-06	Biodiesel Lipase / Culture	Transesterification biocatalyst.

07

CATEGORY • NBE-NU

Fermentation Nutrients & Yield Enhancers

Yeast nutrient, micronutrient & yield additives

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PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBE-NU-01	Yeast Nutrient (DAP)	Nitrogen-source fermentation nutrient.
NBE-NU-02	Micronutrient Blend	Trace-element yeast nutrient.
NBE-NU-03	Vitamin / Growth Factor	Biotin & vitamin nutrient pack.
NBE-NU-04	Yield-Boosting Blend	Productivity-enhancing additive.
NBE-NU-05	High-Gravity Nutrient Pack	VHG fermentation nutrient.

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CATEGORY • NBE-PA

Contamination Control & Process Aids

Antibacterial, antifoam & sanitation aids

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PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBE-PA-01	Antibacterial Control Agent	Lactobacillus-contamination control.
NBE-PA-02	Antifoam Agent	Fermentation foam-control product.
NBE-PA-03	pH / Acid-Wash Management	Yeast acid-wash & pH aid.
NBE-PA-04	Biocide / Sanitiser	Plant-hygiene sanitiser.
NBE-PA-05	Cleaning-in-Place (CIP) Aid	Tank-cleaning process aid.

09

CATEGORY • NBE-CP

Co-Products & By-Product Valorization

DDGS, spent-wash, CO2 & yeast-biomass recovery

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBE-CP-01	DDGS Feed Product	Distillers-grain animal feed.
NBE-CP-02	Spent-Wash / Vinasse Processing	Effluent valorisation process.
NBE-CP-03	CO2 Capture & Utilisation	Fermentation CO2 recovery.
NBE-CP-04	Yeast-Biomass / SCP Recovery	Spent-yeast protein product.
NBE-CP-05	Potash-from-Spent-Wash	Bio-potash recovery process.
NBE-CP-06	Biogas-from-Stillage Culture	Stillage-to-biogas process.

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CATEGORY • NBE-FT

Propagation, QC & Formulation Technology

Yeast propagation, drying, banking & assay methods

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBE-FT-01	Yeast Propagation & Pitching	Seed-train scale-up culture.
NBE-FT-02	Active-Dry-Yeast Drying	Yeast dehydration & stabilisation.
NBE-FT-03	Strain Maintenance & Banking	Master & working cell bank.
NBE-FT-04	Fermentation Monitoring & QC	Process-control & assay methods.
NBE-FT-05	Ethanol Assay & Analysis	Yield & purity testing.
NBE-FT-06	Plant Commissioning Support	Start-up & troubleshooting.

ENROL • FERMENT • FUEL

Build a Career in Biofuel Fermentation

Every program in this catalogue is delivered as hands-on training on working fermentation and distillation equipment — covering strain handling, yeast propagation, saccharification & fermentation, distillation support, yield optimisation, ethanol assay & QC, co-product recovery and bioenergy-compliance support. Mix and match programs to design a track that fits your goals.

60 training programs

10 technology streams

Unique **product code** for every module

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