

INDUSTRIAL BIOTECHNOLOGY • ANTIBIOTIC & METABOLITE SKILL DEVELOPMENT



NTHRYS
OPC PVT LTD



Antibiotics & Secondary Metabolites Industrial Manufacturing Training Programs

A complete industrial catalogue of hands-on fermentation training modules for antibiotics & secondary metabolites — from penicillins & streptomycin to statins & immunosuppressants.

57

PROGRAMS

10

CATEGORIES

2026

EDITION

Program Categories at a Glance

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

STREAM	CATEGORY FOCUS	DESCRIPTION	COUNT
NSM-BL	Beta-Lactam Antibiotics	Penicillin, cephalosporin & nucleus production	6
NSM-AG	Aminoglycoside Antibiotics	Streptomycin & gentamicin fermentation	5
NSM-TM	Tetracycline & Macrolide Antibiotics	Tetracycline, erythromycin & tylosin production	6
NSM-GP	Glycopeptide, Polyene & Peptide Antibiotics	Vancomycin, polyene-antifungal & peptide production	6
NSM-ST	Statins & Cholesterol-Lowering Metabolites	Lovastatin & monacolin statin production	5
NSM-IM	Immunosuppressants & Antitumor Metabolites	Cyclosporine, tacrolimus & antitumor production	6
NSM-BC	Bacteriocins & Antimicrobial Peptides	Nisin, natamycin & lantibiotic production	5
NSM-PR	Production Strains & Fermentation Technology	Streptomyces & fungal sterile fermentation	6
NSM-DS	Downstream Recovery & Purification	Extraction, ion-exchange & crystallisation recovery	6
NSM-FT	Formulation, Grades & Quality Compliance	API, sterile-grade & GMP-compliant finishing	6
Total training programs			57

HOW TO READ A CODE

NSM – BL – 01

NSM Nthrys Secondary-Metabolite Program BL Category stream 01 Program number

01

CATEGORY • NSM-BL

Beta-Lactam Antibiotics

Penicillin, cephalosporin & nucleus production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NSM-BL-01	Penicillin G	Penicillium fermentation penicillin.
NSM-BL-02	Penicillin V	Acid-stable oral penicillin.
NSM-BL-03	6-APA (Penicillin Nucleus)	Semi-synthetic precursor.
NSM-BL-04	Cephalosporin C	Acremonium cephalosporin.
NSM-BL-05	7-ACA / 7-ADCA	Cephalosporin nuclei.
NSM-BL-06	Clavulanic Acid	Beta-lactamase inhibitor.

02

CATEGORY • NSM-AG

Aminoglycoside Antibiotics

Streptomycin & gentamicin fermentation

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NSM-AG-01	Streptomycin	Streptomyces aminoglycoside.
NSM-AG-02	Gentamicin	Micromonospora aminoglycoside.
NSM-AG-03	Kanamycin	Broad-spectrum aminoglycoside.
NSM-AG-04	Neomycin	Topical aminoglycoside.
NSM-AG-05	Tobramycin / Amikacin Base	Aminoglycoside derivatives.

03

CATEGORY • NSM-TM

Tetracycline & Macrolide Antibiotics

Tetracycline, erythromycin & tylosin production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NSM-TM-01	Tetracycline	Streptomyces tetracycline.
NSM-TM-02	Oxytetracycline	Broad-spectrum tetracycline.
NSM-TM-03	Chlortetracycline	Feed & pharma tetracycline.
NSM-TM-04	Erythromycin	Macrolide antibiotic.
NSM-TM-05	Tylosin	Veterinary macrolide.
NSM-TM-06	Spiramycin	Macrolide antibiotic.

04

CATEGORY • NSM-GP

Glycopeptide, Polyene & Peptide Antibiotics

Vancomycin, polyene-antifungal & peptide production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NSM-GP-01	Vancomycin	Glycopeptide antibiotic.
NSM-GP-02	Teicoplanin	Glycopeptide antibiotic.
NSM-GP-03	Nystatin	Polyene antifungal.
NSM-GP-04	Amphotericin B	Polyene antifungal.
NSM-GP-05	Bacitracin	Peptide antibiotic.
NSM-GP-06	Polymyxin B / Colistin	Peptide antibiotic.

05

CATEGORY • NSM-ST

Statins & Cholesterol-Lowering Metabolites

Lovastatin & monacolin statin production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NSM-ST-01	Lovastatin	Aspergillus statin.
NSM-ST-02	Pravastatin	Biotransformed statin.
NSM-ST-03	Mevastatin (Compactin)	Statin precursor.
NSM-ST-04	Monacolin K (Red Yeast Rice)	Monascus statin.
NSM-ST-05	Simvastatin Precursor	Semi-synthetic statin base.

06

CATEGORY • NSM-IM

Immunosuppressants & Antitumor Metabolites

Cyclosporine, tacrolimus & antitumor production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NSM-IM-01	Cyclosporine A	Tolypocladium immunosuppressant.
NSM-IM-02	Tacrolimus (FK506)	Streptomyces immunosuppressant.
NSM-IM-03	Rapamycin (Sirolimus)	mTOR-inhibitor metabolite.
NSM-IM-04	Mycophenolic Acid	Penicillium immunosuppressant.
NSM-IM-05	Doxorubicin / Daunorubicin	Anthracycline antitumor.
NSM-IM-06	Bleomycin	Glycopeptide antitumor.

07

CATEGORY • NSM-BC

Bacteriocins & Antimicrobial Peptides

Nisin, natamycin & lantibiotic production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NSM-BC-01	Nisin	Lactococcus food preservative.
NSM-BC-02	Natamycin (Pimaricin)	Antifungal food preservative.
NSM-BC-03	Pediocin	Pediococcus bacteriocin.
NSM-BC-04	Epsilon-Polylysine	Antimicrobial peptide.
NSM-BC-05	Subtilin / Lantibiotic	Bacillus lantibiotic.

CODE	TRAINING PROGRAM	DESCRIPTION
NSM-PR-01	Streptomyces Fermentation Process	Actinomycete antibiotic process.
NSM-PR-02	Fungal Fermentation Process	Penicillium / Aspergillus process.
NSM-PR-03	Strain Development & Mutagenesis	High-titre strain improvement.
NSM-PR-04	Fed-Batch & Precursor Feeding	Industrial fed-batch process.
NSM-PR-05	Submerged Aseptic Fermentation	Sterile bioreactor operation.
NSM-PR-06	Biotransformation & Semi-Synthesis	Enzymatic side-chain modification.

CODE	TRAINING PROGRAM	DESCRIPTION
NSM-DS-01	Broth Filtration & Clarification	Cell-broth separation.
NSM-DS-02	Solvent Extraction	Liquid-liquid extraction.
NSM-DS-03	Ion-Exchange & Adsorption	Resin recovery.
NSM-DS-04	Crystallisation & Precipitation	Product crystallisation.
NSM-DS-05	Chromatographic Purification	Preparative purification.
NSM-DS-06	Drying & Sterile Finishing	Lyophilisation & sterile drying.

CODE	TRAINING PROGRAM	DESCRIPTION
NSM-FT-01	API / Bulk-Drug Grade	Active-ingredient grade.
NSM-FT-02	Sterile Injectable Grade	Parenteral formulation.
NSM-FT-03	Oral / Tablet Formulation	Solid-dose formulation.
NSM-FT-04	Veterinary / Feed Grade	Animal-health grade.
NSM-FT-05	GMP & Regulatory Compliance	cGMP & documentation.
NSM-FT-06	Assay, Potency & QC	Bioassay & analytical QC.

ENROL • FERMENT • PURIFY

Build a Career in Pharmaceutical Fermentation

Every program in this catalogue is delivered as hands-on training on working sterile-fermentation and bioprocess equipment — covering producer-strain handling & improvement, sterile submerged fermentation, biotransformation, recovery & purification, API & sterile finishing, GMP & regulatory compliance and bioassay & QC. Mix and match programs to design a track that fits your goals.

57 training programs

10 technology streams

Unique **product code** for every module

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