

Microbiology (MS)

Degree Requirements

Students may choose from the Microbiology course tracks below to complete coursework within a focus area.

Degrees earned will be distributed as: "Master of Science in Microbiology" without focus area track specifications.

Code	Title	Hours
Core Courses		11
MB 601	Seminar	
MB 670	Laboratory Research Methods	
MB 686	Teaching Experience	
MB 590	Topical Problems (Professional Development)	
MB 695	Master's Thesis Research (6 credits minimum)	
Microbiology Courses		6
See "Microbiology Courses" listed below		
Professional Development course		1
"Professional Development Course" is determined in conjunction with the academic committee		
Elective Courses		12
See "Elective Courses" listed below		
Total Hours		30

Microbiology Courses

The field of Microbiology includes several specialized disciplines such as bacterial physiology, microbial genomics and metagenomics, microbiomes, environmental microbiology, immunology, host-pathogen interactions, molecular genetics and virology. At NC State, M.S. students can take courses that represent, and focus on, the various disciplines of Microbiology. Example courses, fitting into two microbiology "tracks" or focus areas are:

Code	Title	Hours
Environmental / Industrial Track		
MB 520	Fundamentals of Microbial Cell Biotransformations	2
MB 532	Soil Microbiology	4
MB 555	Microbial Biotechnology	3
MB 590	Topical Problems	1-3
MB 505	Food Microbiology	3
MB 714	Microbial Metabolic Regulation	3
MB 725	Fermentation Microbiology	3
MB 758	Microbial Genetics & Genomics	3
Host-Pathogen Interactions Track		
MB 535	Bacterial Pathogenesis	3
MB 718	Introductory Virology	3
MB 751	Immunology	3
BCH 553	Biochemistry of Gene Expression	3
BCH 705	Molecular Biology Of the Cell	3
BMA 771/772	Biomathematics I	3
CBS 712	Reproductive Management and Disease in Domestic Animals	1
ENT 582	Medical and Veterinary Entomology	3

PP 707	Plant Microbe Interactions	3
ST 511/512	Statistical Methods For Researchers I	3

Elective Courses

Selection of elective courses is done by the student, in consultation with and approval by the advisory committee.

Code	Title	Hours
Below are examples of elective courses available:		
BAE 525	Industrial Microbiology and Bioprocessing	3
BCH 553	Biochemistry of Gene Expression	3
BCH 701	Macromolecular Structure	3
BCH 703	Macromolecular Synthesis and Regulation	3
BCH 705	Molecular Biology Of the Cell	3
BIT 510	Core Technologies in Molecular and Cellular Biology	4
BIT 595	Special Topics	1-6
GN 701	Molecular Genetics	3
GN 735	Functional Genomics	3
GN 850	Professionalism and Ethics	1
MB/PP 730	Fungal Genetics and Physiology	3
MB 610	Special Topics Microbiology	1-6
MB 620	Special Problems	1-6
MB 601/801	Seminar	1
MB 690/890	Master's Examination	1-9
MB 695/895	Master's Thesis Research	1-9
MB/IMM 783	Advanced Immunology	3
MB 790	Topical Problems (Practical Digital Imaging)	1-3

Additional Requirements

- 18 credits must be graded
- All graduate students must maintain a minimum cumulative grade point average of 3.0
- The program is completed upon submission of a thesis and completion of all credit requirements

Faculty

Full Professors

Prema Arasu
 Rodolphe Barrangou
 Frederick Breidt
 Dennis T. Brown
 James W. Brown
 Susan B. Carson
 Mari S. Chinn
 Marc A. Cubeta
 Robert R. Dunn
 Frederick J. Fuller

Amy Michele Grunden

Hosni Moustafa Hassan

Christine Veronica Hawkes

Shuijin Hu

Michael Hyman

Lee-Ann Jaykus

Sophia Kathariou

Robert M. Kelly

Matthew D. Koci

Scott M. Laster

Hsiao-Ching Liu

John M. Mackenzie Jr.

Eric S. Miller

Ian T. Petty

Barbara Sherry

Siddhartha Thakur

Jeffrey A. Yoder

Associate Professors

Jose Manuel Bruno-Barcena

Nicolas Emile Buchler

Jonathan E. Fogle

Reza A. Ghiladi

Paul T. Hamilton

Megan E. Jacob

Cristina Lanzas

Jonathan W. Olson

Joshua Glenn Pierce

Frank Scholle

Michael L. Sikes

Robert G. Upchurch

Gavin John Williams

Assistant Professors

Oliver Baars

Benjamin John Callahan

Wei-Chen Chang

Nathan Crook

Angela Rose Harris

Manuel Kleiner

Ryan William Paerl

Ilenys Muniz Perez Diaz

Casey Michelle Theriot

Emeritus Faculty

Paul Edward Bishop

James W. Brown

Walter J. Dobrogosz

Gerald Hugh Elkan

Michael Carl Flickinger

Todd Robert Klaenhammer

Wesley Edwin Kloos

Geraldine Luginbuhl

Paul E. Orndorff

Leo W. Parks

Jason C. Shih

Adjunct Faculty

James M. Ligon

Scott Harold Shore

Daniel van der Lelie