

TEACHING, WITH TEACHER CERTIFICATION IN BIOLOGICAL SCIENCE (PRESCHOOL-GRADE 12) (M.A.T.)

Students with a baccalaureate degree and interest in teaching may pursue the Post-BA program for certification only **or** the Master of Arts in Teaching (MAT) which simultaneously leads to certification **and** Master's Degree. The content area program is open to students who wish to teach one of the following content areas in K-12 schools:

- Art
- Biology
- Chemistry
- Earth Science
- English
- French
- Health & Physical Education
- Mathematics
- Music
- Physical Science
- Physics
- Social Studies
- Spanish
- Teacher of English as a Second Language

Montclair State University's Teacher Education Program is one of the most highly-regarded teacher preparation programs in the country. It has been consistently recognized both nationally and regionally for its unique features, including its structure, partnerships, and curricular emphases. The program is considered a model for other colleges and universities and has continuously been accredited by the National Council for the Accreditation of Teacher Education (NCATE) since 1954.

The Teacher Education Program's professional course sequence and field experiences emphasize teaching for critical thinking and culturally responsive teaching. The professional component for both graduate students addresses four broad areas:

1. Student development and learning
2. The classroom and the school
3. The curriculum
4. Effective teaching skills

Program Requirements

Code	Title	Credits
Additional Requirements for State Certification		
<i>Speech</i>		
CMST 101	Fundamentals of Speech: Communication Requirement	3
<i>Physiology and Hygiene</i>		

Pass the MSU Health Knowledge Test available through the COP or have UG equivalent course approved by advisor.

<i>Educational Psychology</i>		
PSYC 560	Advanced Educational Psychology	3
Program Requirements - Graduate Professional Sequence		
<i>Introductory Sequence</i>		
SASE 505	Teaching, Democracy, and Schooling	3
SASE 518	Technology Integration in the Classroom	1
<i>Diversity and Instructional Sequence</i>		
SASE 509	Sociocultural Perspectives on Curriculum and Assessment	3
SASE 516	Meeting the Needs of English Language Learners	1
SASE 517	Inclusive Classrooms in Middle and Secondary Schools	1
SASE 519	Assessment for Authentic Learning	3
READ 501	Techniques of Reading Improvement in the Secondary School	3
<i>Teaching Methods</i>		
Select from the list below according to subject area:		3-6
<i>Pedagogical Sequence I</i>		
SASE 526	Seminar in Inclusive Pedagogies	3
SASE 527	Clinical Practice I	3
<i>Pedagogical Sequence II</i>		
SASE 529	Clinical Practice II	6
SASE 543	Advanced Seminar in Inclusive Pedagogies	3
Comprehensive Examination		
In the term that you will sit for exam, register for the section which matches your major & advisor. Successfully pass exam.		
GRAD CMP	Comprehensive Examination	
Total Credits		39-42
Teaching Methods		
Code	Title	Credits
Select course(s) according to subject area:		
<i>Art</i>		
ARED 511	Foundations of Methods and Curriculum in Art Education I: P-12	6
ARED 512	Foundations of Methods and Curriculum in Art Education II: P-12	
<i>Biological Science, Earth Science, Physics or Physical Science</i>		
SASE 502	Teaching Science in Secondary Schools	4
<i>Chemistry</i>		
CHEM 501	Teaching Chemistry in the Secondary School	3
<i>English</i>		
ENGL 571	Teaching Methods (Secondary English)	4
<i>Teaching English as a Second Language</i>		
APLN 525	Methodology of Teaching ESL	3
<i>French</i>		
FREN 502	Theories and Approaches to Teaching French as a Second Language	6
FREN 519	Teaching French in P-12: Practice	
<i>Mathematics</i>		
MATH 519	Teaching Mathematics	4
<i>Music</i>		
		6

MUED 556	Teaching Methods for the Elementary Music Class	
MUED 557	Teaching Methods for Music in the Secondary Schools	
<i>Social Studies</i>		3
SASE 501	Graduate Methods of Teaching Social Studies	
<i>Spanish</i>		3
SPAN 518	Teaching Spanish in K-12	

Subject Matter Preparation

Code	Title	Credits
<i>Biology Requirements</i>		
BIOL 112	Principles of Biology I	4
BIOL 113	Principles of Biology II	4
BIOL 213	Introduction to Ecology	4
BIOL 230	Cell and Molecular Biology	4
BIOL 380	Genetics	4
<i>Collateral Chemistry Courses</i>		
CHEM 120	General Chemistry I	4
CHEM 121	General Chemistry II	4
CHEM 230	Organic Chemistry I	3
CHEM 231	Organic Chemistry II	3
CHEM 232	Experimental Organic Chemistry I	2
<i>Collateral Mathematics Courses</i>		
Select one of the following sequences:		7-8
STAT 109 & MATH 111	Statistics and Applied Precalculus	
MATH 111 & AMAT 120	Applied Precalculus and Applied Calculus A	
MATH 122 & MATH 221	Calculus I and Calculus II	
<i>Collateral Physics Courses</i>		
PHYS 191 or PHYS 193	University Physics I College Physics I	4
PHYS 192 or PHYS 194	University Physics II College Physics II	4
<i>Biology Electives</i>		
Select 12 credits (from Biology Electives list below)		12
<i>Earth Science Elective</i>		
Select one of the following:		4
EAES 101	Planet Earth	
EAES 105	Physical Geology	
EAES 107	Earth and the Environment	
EAES 240	Earth System History	
Total Credits		68

Biology Electives

Code	Title	Credits
BIOL 300	Environmental Biology and Related Controversial Issues	3
BIOL 330	Introduction to Animal Behavior	3
BIOL 350	Microbiology	4
BIOL 360	Introduction to Bio-Imaging	3
BIOL 370	Principles of Ecology	3

BIOL 380	Genetics	4
BIOL 409	Externship in Biological Research (Co-operative Education)	1-4
BIOL 410	Toxicology	3
BIOL 411	Introduction to Transmission Electron Microscopy	4
BIOL 415	Population Genetics	3
BIOL 417	Evolutionary Biology	3
BIOL 418	Biology Independent Research	1-4
BIOL 420	Economic Botany	3
BIOL 425	Elementary Plant Physiology	3
BIOL 429	Herpetology	4
BIOL 430	Ornithology	4
BIOL 431	Entomology	3
BIOL 432	Medical Entomology	3
BIOL 433	Developmental Biology	4
BIOL 434	Molecular Biology	3
BIOL 435	Experimental Molecular Biology	3
BIOL 436	Phylogenetic Zoology	4
BIOL 439	Biology of Animal Parasites	3
BIOL 440	Gross Mammalian Anatomy	4
BIOL 441	Comparative Anatomy of Vertebrates	4
BIOL 442	Human Physiology	4
BIOL 443	Vertebrate Embryology	4
BIOL 444	Cell Physiology	3
BIOL 445	Immunology	3
BIOL 446	Endocrinology	3
BIOL 447	Fundamentals of Pharmacology	3
BIOL 450	Medical Microbiology	3
BIOL 451	Comparative Animal Physiology	3
BIOL 457	Virology	3
BIOL 458	Microbial Genetics	3
BIOL 460	Biological Oceanography	3
BIOL 461	Aquatic Ecology	3
BIOL 467	Biology of the Fishes	4
BIOL 468	Neurobiology	3
BIOL 475	Medical Genetics	3
BIOL 476	Biology of Cancer	3
BIOL 480	Research Community I: Organism Biology	4
BIOL 481	Research Community II: Organism Biology	4
BIOL 482	Research Community I: Molecular Biology	4
BIOL 483	Research Community II: Molecular Biology	4
BIOL 484	Research Community I: Ecology	4
BIOL 485	Research Community II: Ecology	4
BIOL 486	Special Topics in Biology	3-4
BIOL 487	Statistical Genomics	3
BIOL 488	Special Topics in Cell and Molecular Biology	3-4
BIOL 489	Special Topics in Organismal Biology	3-4
BIOL 490	Senior Seminar in Biology	3
BIOL 491	Research in Biology Literature	1
BIOL 492	Senior Colloquium	1
BIOL 493	Molecular Ecology	3
BIOL 497	Genomics	3

BIOL 500	Introductory Molecular Cell Biology	1.5	BIOL 595	Conservation Biology: The Preservation of Biological Diversity	3
BIOL 505	Experimental Cell Culture	3	BIOL 596	Selected Techniques in Biology Science Education	1.5
BIOL 510	Biology Pedagogy for Secondary Teachers	3	BIOL 597	Research in Biological Literature	1
BIOL 512	Special Topics in Modern Genetics	3	BIOL 598	Selected Techniques in Molecular Biology	1.5
BIOL 514	Graduate Seminar in Biology	2	BIOL 599	Introduction to Biological Research	4
BIOL 515	Population Genetics	3	BIOL 601	Advanced Biological Science Education Pedagogy	3
BIOL 518	Strategies for Teaching College Biology	1			
BIOL 520	Plant Physiology	3			
BIOL 521	Field Studies of Flowering Plants	4			
BIOL 529	Advanced Herpetology	4			
BIOL 532	Advanced Entomology	3			
BIOL 533	Advanced Cell Biology	3			
BIOL 540	Mammalian Physiology	3			
BIOL 542	Advanced Endocrinology	3			
BIOL 543	Advances in Immunology	3			
BIOL 544	Advanced Comparative Animal Physiology	3			
BIOL 545	Experimental Endocrinology	4			
BIOL 546	Special Topics in Physiology Special Topics in Physiology	3			
BIOL 547	Molecular Biology I	3			
BIOL 548	Molecular Biology II	4			
BIOL 549	Special Topics in Developmental Biology	3			
BIOL 550	Special Topics in Microbiology	3			
BIOL 552	Biology of Lipids	3			
BIOL 554	Microbial Physiology	3			
BIOL 555	Medical Genetics	3			
BIOL 556	Molecular Biology of Proteins	3			
BIOL 557	Virology	3			
BIOL 558	Microbial Genetics	3			
BIOL 560	Molecular Genetics	3			
BIOL 561	Genomics	3			
BIOL 562	Special Topics in Molecular Biology	1			
BIOL 563	Statistical Genomics	3			
BIOL 564	Proteomics	3			
BIOL 566	Bioinformatics	4			
BIOL 568	Advanced Neuroscience	3			
BIOL 570	Ecology	3			
BIOL 571	Physiological Plant Ecology	4			
BIOL 572	Wetland Ecology	4			
BIOL 573	Shoreline Ecology	4			
BIOL 574	Behavioral Ecology	3			
BIOL 575	Avian Biology	4			
BIOL 576	Biology of Extreme Habitats	3			
BIOL 579	Physiological Ecology of Animals	3			
BIOL 580	Evolutionary Mechanisms	3			
BIOL 586	Special Topics in Advanced Biology	3-4			
BIOL 587	Special Topics in Advanced Molecular Biology	3-4			
BIOL 588	Special Topics in Advanced Physiology	3-4			
BIOL 589	Special Topics in Advanced Ecology	3-4			
BIOL 592	Graduate Colloquium	1			
BIOL 593	Molecular Ecology	3			
BIOL 594	Signal Transduction	3			