THE OHIO STATE UNIVERSITY

College of Arts and Sciences

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June 2, 2011

To: W. Randy Smith, Vice Provost, Office of Academic Affairs
From: Terry L. Gustafson, Special Assistant to the Executive Dean for Semester Conversion
Re: Arts and Sciences Program Proposals from the Natural and Mathematical Sciences Division

Arts and Sciences is pleased to submit the following programs from the Natural and Mathematical Sciences Division to the Office of Academic Affairs for conversion from quarters to semesters. The programs have been approved by the faculty members and chair of the originating unit, and reviewed and approved by the divisional advisory panel, a subcommittee of the ASC Committee on Curriculum and Instruction (CCI), and the full CCI. The vote for approval of all programs at the full CCI was unanimous.

Program Name	Academic Plan Code	Conversion Designation	CCI Approval	Last Revision
Earth Sciences BA	EARTHSC-BS	Converted	5/2/2011	Prior to 2006
Earth Sciences Minor	EARTHSC-MN	Re-envisioned	5/6/2011	Prior to 2006
Mathematics Minor	MATH-MN	Converted	5/6/2011	8/18/2008
Molecular Genetics BS	MOLGEN-BS	Re-envisioned	5/20/2011	Prior to 2006
Molecular Genetics Minor	MOLGEN-MN	Converted	5/20/2011	Prior to 2006
Plant Cellular and Molecular Biology Minor	PCMB-MN	Converted	5/16/2011	Prior to 2006

Arts and Sciences General Education (GE) Program: The GE program for untagged B.A. and B.S. degrees in Arts and Sciences was approved by the Council on Academic Affairs on May 26, 2010, after receiving approval from the Arts and Sciences Faculty Senate. All the programs presented here follow the approved GE program.

College of Arts and Sciences Transition Policy: The College of Arts and Sciences is committed to the principles outlined in the university's Pledge to Undergraduate Students. Each unit has a plan on how best to assist its majors and minors through the transition. And the Arts and Sciences Academic Advising Services will advise students on how to transition their GE program. Dual advising is the existing process used in Arts and Sciences and will continue under semesters.

Status: PENDING

PROGRAM REQUEST
Molecular Genetics

Last Updated: Vankeerbergen,Bernadette Chantal
05/17/2011

Fiscal Unit/Academic Org	Molecular Genetics - D0340
Administering College/Academic Group	Biological Sciences
Co-adminstering College/Academic Group	
Semester Conversion Designation	Re-envisioned with significant changes to program goals and/or curricular requirements (e.g., degree/major name changes, changes in program goals, changes in core requirements, structural changes to tracks/options/courses)
Current Program/Plan Name	Molecular Genetics
Proposed Program/Plan Name	Molecular Genetics
Program/Plan Code Abbreviation	MOLGEN-BS
Current Degree Title	Bachelor of Science

Credit Hour Explanation

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program		40	26.7	30	3.3
Required credit hours offered by the unit	Minimum	19	12.7	17	4.3
	Maximum	35	23.3	26	2.7
Required credit hours offered outside of the unit	Minimum	5	3.3	4	0.7
	Maximum	21	14.0	13	1.0
Required prerequisite credit hours not included above	Minimum	67	44.7	50	5.3
	Maximum	69	46.0	50	4.0

Explain any change in credit hours if the difference is more than 4 semester credit hours between the values listed in columns B and C for any row in the above table

We have reorganized and expanded content amongst the required core courses for our major. The first two courses in the quarter-based sequence (MG 605 and 606) have been merged into a single four semester hour class (MG 4606) that undergraduates will take during their sophomore year. Some content from MG 605 and 606 has been moved to MG 5607 and MG 5608. In addition, we are now requiring a course in Population and Evolutionary Genetics (MG 5640) as part of the core sequence. These changes will allow our majors to start their Molecular Genetics core courses as sophomores with completion of the core sequence as juniors. This will open up the senior year for upper level electives to complete the 30 semester hour major.

Required prerequisites for the major have increased due to changes in the Organic Chemistry Lecture and Lab courses. We were uncomfortable with a decrease in the organic chemistry requirement and decided that a slight increase in organic chemistry credit hours was acceptable and more desirable choice for our undergraduate majors.

Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

Program Learning Goals

- 1. Undergraduate Molecular Genetics majors acquire a basic mastery of fundamental concepts of biology, chemistry, mathematics, physics, and the scientific method.
- 2. Undergraduate majors acquire a basic mastery of molecular genetics, including transmission genetics, central dogma, regulation of gene expression, quantitative and population genetics, genomics, recombinant DNA, and cell and developmental biology.
- 3. Undergraduate Molecular Genetics majors develop analytical and problem solving skills in areas of genetics and molecular biology.
- 4. Undergraduate Molecular Genetics majors acquire a basic mastery of experimental techniques and approaches in genetics and molecular biology.
- 5. Undergraduate Molecular Genetics majors acquire a basic mastery of data analysis and statistical approaches used in genetics.
- 6. Undergraduate Molecular Genetics majors effectively communicate their understanding of genetics and molecular biology both orally and in writing.
- 7. Undergraduates Molecular Genetics majors participate in academic research and/or outreach activities that are consistent with their interests and postgraduate plans.
- 8. Undergraduate Molecular Genetics majors acquire expertise relevant to their chosen area of specialization.

Assessment

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? Yes

Does the degree program or major have an assessment plan on file with the university Office of Academic Affairs? Yes

Summarize how the program's current quarter-based assessment practices will be modified, if necessary, to fit the semester calendar.
We do not anticipate any required changes to our assessment practices as we transition to semesters.

Program Specializations/Sub-Plans

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

Program Specialization/Sub-Plan Name Plant Cell & Mol Biology (New)

Program Specialization/Sub-Plan Goals

- The Plant Cellular and Molecular Biology (PCMB) Specialization shares the first eight learning goals with the standard Molecular Genetics Major.
- 9. Undergraduate majors with a PCMB specialization acquire mastery of concepts and approaches fundamental and/or unique to plant biology.

Pre-Major

Does this Program have a Pre-Major? No

Attachments

- MG_Major_Proposal.pdf

(Program Proposal. Owner: Shannon,Laurel Jean)

- MolGen BS major cover letter.doc: NMS Division of Arts and Sciences cover letter

(Letter from the College to OAA. Owner: Andereck,Claude David)

Status: PENDING

PROGRAM REQUEST
Molecular Genetics

Last Updated: Vankeerbergen,Bernadette Chantal
05/17/2011

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Shannon,Laurel Jean	11/29/2010 01:29 PM	Submitted for Approval
Approved	Vaessin,Harald Emil Friedrich	11/29/2010 04:50 PM	Unit Approval
Revision Requested	Andereck,Claude David	12/08/2010 12:41 PM	College Approval
Submitted	Shannon,Laurel Jean	01/19/2011 02:00 PM	Submitted for Approval
Approved	Vaessin,Harald Emil Friedrich	01/19/2011 05:21 PM	Unit Approval
Revision Requested	Andereck,Claude David	01/26/2011 05:10 PM	College Approval
Submitted	Shannon,Laurel Jean	01/28/2011 05:59 PM	Submitted for Approval
Revision Requested	Vaessin,Harald Emil Friedrich	01/28/2011 06:11 PM	Unit Approval
Submitted	Vaessin,Harald Emil Friedrich	01/28/2011 06:12 PM	Submitted for Approval
Approved	Vaessin,Harald Emil Friedrich	01/28/2011 06:13 PM	Unit Approval
Approved	Andereck,Claude David	02/01/2011 01:21 PM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	02/10/2011 10:28 AM	ASCCAO Approval
Submitted	Shannon,Laurel Jean	05/02/2011 05:14 PM	Submitted for Approval
Revision Requested	Vaessin,Harald Emil Friedrich	05/03/2011 03:55 PM	Unit Approval
Submitted	Shannon,Laurel Jean	05/03/2011 04:07 PM	Submitted for Approval
Approved	Vaessin,Harald Emil Friedrich	05/03/2011 04:28 PM	Unit Approval
Approved	Andereck,Claude David	05/06/2011 02:56 PM	College Approval
Pending Approval	Nolen,Dawn Jenkins,Mary Ellen Bigler Meyers,Catherine Anne Vankeerbergen,Bernadette Chantal Hanlin,Deborah Kay	05/06/2011 02:56 PM	ASCCAO Approval

College of Arts and Sciences

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May 6, 2011

Larry Krissek
Chair, Arts and Sciences CCI

Dear Larry:

It is a pleasure to forward to you the proposal for the undergraduate Bachelor of Science major in Molecular Genetics under semesters. This program incorporates the formerly separate Plant Cellular and Molecular Biology (PCMB) major as a specialization of the Molecular Genetics major, reflecting the merger of the two departments. The common core will now have examples drawn from plant biology, thus enhancing and generalizing the experience for the Molecular Genetics majors. Molecular Genetics majors will begin their major-specific courses in the sophomore year, more rapidly than in the quarter version. Other changes involve some course content modifications (including a somewhat broader coverage of topics in the PCMB specialization courses), and the addition of a new core course in evolutionary genetics (elective for the PCMB specialization) and two embedded honors courses.

Beyond my own review of the documents, the proposal has been discussed with colleagues from other NMS units at a meeting on December 8, 2010. Feedback from these discussions, and from the CCI Sciences Subcommittee has been incorporated in the proposal.

If you have any questions, I would be happy to address them.

Sincerely,

David Andereck
Professor of Physics
Associate Dean of Natural and Mathematical Sciences, College of Arts and Sciences

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To: Office of Academic Affairs

From: Anita Hopper, Chair, Department of Molecular Genetics

Anita K Hopper

Mark Seeger, Associate Chair, Department of Molecular Genetics

Mark A. Seeger

Date: January 27, 2011

Re: Semester Program Proposal for Undergraduate Molecular Genetics Major

The Department of Molecular Genetics has the following programs that will be converted from quarters to semesters:

1) Undergraduate Molecular Genetics Major (BS)
2) Undergraduate Molecular Genetics Major with a Specialization in Plant Cellular and Molecular Biology (BS)
3) Undergraduate Molecular Genetics Minor
4) Undergraduate Plant Cellular and Molecular Biology Minor
5) Molecular Genetics MS
6) Molecular Genetics PhD

The subject of this proposal is the Undergraduate Major in Molecular Genetics (BS) and the Molecular Genetics Major with Specialization in Plant Cellular and Molecular Biology (BS).

The Molecular Genetics Curriculum Committee and other subsets of Molecular Genetics and Plant Cellular and Molecular Biology (PCMB) faculty have been working on semester conversion for the past year. This process has included a critical reexamination of the Molecular Genetics Major and Minor, focusing on the core course sequence. In addition, we have created a new Plant Cellular and Molecular Biology Specialization within the Molecular Genetics Major that will meet the needs of undergraduates desiring a plant biology focus to their major. With the imminent merger of the Departments of Molecular Genetics and PCMB, the PCMB Undergraduate Major will not be available to new students starting Autumn 2012.

The contents of this proposal have been discussed at multiple faculty meetings during Spring Quarter 2010 and extending into Autumn Quarter 2010. Proposed changes to the major were presented to Molecular Genetics undergraduates at the first Autumn Meeting of the Molecular Genetics Undergraduate Student Organization where strong support for the changes outlined in this proposal was voiced. Since Molecular Genetics and PCMB graduate students have representation at departmental faculty meetings, they've had a clear opportunity to contribute to this proposal. The contents of the proposal were approved by unanimous vote (21-0) of the Molecular Genetics and PCMB faculty at the November 2010 faculty meeting. Transition plans are provided as a component of this proposal. The department has adequate resources to meet the increased advising that is anticipated throughout the semester conversion process. Molecular Genetics Majors are advised by three faculty members: Drs. Fisk and Simcox advise all undergraduates in the Honors Program, and Dr. Booton advises all other undergraduates. The total number of Molecular Genetics majors fluctuates between 250 and 300 students. Students pursuing a PCMB Specialization with their Molecular Genetics Major or the PCMB Minor will be advised by a faculty member with expertise in plant biology (currently this faculty member is Dr. David Somers). The number of current PCMB undergraduate majors is less than 15 students; the number of PCMB minors is even less. Thus, any increases in advising of plant-focused undergraduates due to the transition to semesters can be easily accommodated within our current advising plan.

Rationale for Changes to the Undergraduate Molecular Genetics Major Program
There are three changes to the Molecular Genetics Undergraduate Major as we transition to semesters. All of these changes impact the core sequence of classes required for all majors. First, we are merging MG 605 Molecular Genetics I (4 quarter hours) and MG 606 Molecular Genetics II (4 quarter hours) into a single class, MG 4606 Molecular Genetics (4 semester hours). Traditionally, most students have taken their first MG classes starting Winter Quarter of their junior year. In semesters students will take their first MG class their sophomore year. This will allow students to complete the core sequence their junior year and free up their senior year for upper level electives within the major. This change is a significant improvement to our major and strongly endorsed by our undergraduates. To keep MG 4606 as a four-semester hour course we are moving some content to MG 5607 Cell Biology (3 semester hours) and MG 5608 Genes and Development (3 semester hours). The quarter system counterparts, MG 607 and MG 608, were both three quarter hour classes. The second change is the addition of MG 5640 Evolutionary Genetics (2 semester hours) as a required core course for Molecular Genetics Majors. We feel the increased exposure to population and quantitative genetics is important for our majors. The relatively limited exposure to topics in population and quantitative genetics that our students previously had in MG 605 will be moved to MG 5640 and significantly expanded. The third change is the creation of two Embedded Honors Courses, M 5607E and MG 5608E. Both of these classes will include an additional one-hour, faculty-directed recitation section that will delve deeper into lecture topics through the use of additional primary literature research articles. Currently we offer a stand-alone honors version of MG 607. The staffing of a stand-alone honors course has proven problematic as the enrollment in the majority of our classes continues to increase substantially.

Rationale for Creation of the Plant Cellular and Molecular Biology (PCMB) Specialization within the Molecular Genetics Major
The merger of the Molecular Genetics Department with the Department of Plant Cell and Molecular Biology was driven in part by the small number of PCMB Undergraduate Majors (less than 20 PCMB undergraduate majors). To continue to offer a plant intensive option for students seeking such an educational experience, we have created a Plant Cellular and Molecular Biology Specialization within the Molecular Genetics Major. Traditional Molecular Genetics Majors and those seeking the PCMB Specialization will share foundational coursework in genetics, molecular, cell and developmental biology. All of these common core courses will utilize examples from plants as well as other genetic model systems, including fungal, invertebrate and vertebrate organisms. Courses unique to the PCMB specialization will include two core courses: MG 3300 General Plant Biology and MG 3436 Introductory Plant Physiology. MG 5640 Evolutionary Genetics will not be a required core course for the PCMB Specialization, but will be an optional elective. All other electives will be from courses with a plant specific focus. The PCMB Specialization will be remarkably similar to the previous PCMB Undergraduate Major with the difference that foundational topics in genetics, molecular, cell and developmental biology will be taught from a broader perspective and will not have a unique focus on plants. These changes ensure that we have the faculty to teach the important courses that require a plant specific focus. An additional advantage is the increased exposure to plants that all Molecular Genetics majors will encounter. The faculty felt that the Molecular Genetics Major with Specialization in PCMB was favorable to maintaining a stand alone PCMB Undergraduate Major. If the PCMB Specialization proves successful and meets the needs of students desiring a

more plant specific focus, we can imagine proposing other specializations within the Molecular Genetics Undergraduate Major in the future.

Transition Policy

Students who begin their degree under quarters will not be penalized as we move to semesters. Our major and minor are not dependent upon specific sequences of courses. With the exception of the merging of MG 605 and MG 606 into MG 4606, most courses will continue to exist with similar content. Essentially all students take MG 605 (offered in Winter Quarter) and MG 606 (offered in Spring Quarter) in consecutive quarters, so the students who have completed only one of these courses will be quite limited in number (past experience suggests this will be less than 5 students). These students will be advised on an individual basis to determine the best course of action with specific consideration to their performance in the course and at the same time minimizing any delay in their progress to degree completion. For students who fail to complete MG 606 an individual study plan will be developed for the specific needs of the student. This will include utilization of MG 5193 Individual Studies to substitute for MG 606.

We will provide quarterly updates to all of our undergraduate majors via email in the year preceding the semester conversion. These emails will communicate the importance of ensuring that major prerequisite course sequences in chemistry, math, and physics be completed to ensure a smooth transition to semesters. We do not foresee any significant difficulties in the transition process that are unique to our undergraduate major or minor programs.

MG Undergraduate Major - Semesters

Part A. Required Prerequisites (do not count toward the 30 hour major)

1. Bio 1113 (4) AND 1114 (4)
2. Chem 1210 (5) AND Chem 1220 (5)
3. Chem 2510 (4), 2520 (4), 2540 (2), and 2550 (2)
4. Math 1150 Pre-Calculus (5) AND Math 1156 Calculus for Biological Sciences (5) OR Math 1151 (5)
5. Physics 1200 (5) AND 1201 (5)

Honors or more advanced versions for any of these courses are acceptable.

Part B. Core Requirements (the core comprises at least 19 credit hours of the 30 credit hour major):

1. Biochemistry 4511 (4) OR
   Biochemistry 5613 (3) AND Biochemistry 5614 (3)
2. MG 4606 Molecular Genetics (4).
3. MG 5607 Cell Biology (3) or MG5607E (4)
4. MG 5608 Genes and Development (3) or MG5608E (4)
5. MG 5640 Genetic Basis of Evolution (2)
6. MG 5601 Molecular Genetics Lab (3-4) or MG5602 Cell and Developmental Biology Lab (3-4). Both lab courses require either MG 4606 or MG 4500 as a prerequisite. MG majors may substitute 4 semester credit hours of Undergraduate Research (either MG 4998, 4998H, 4999, or 4999H) for the MG laboratory requirement.

Part C. Electives (choose at least 3 electives from the following list; electives plus the core must total at least 30 credit hours):

MG 2220H Introduction to Molecular Life Sciences: Research Opportunities and Career Options (1)
MG 4503 Molecular Genetics Writing Project (1)
MG 4591S DNA Fingerprinting Workshop (1)
MG 4998 (or 4998H) Undergraduate Research and/or MG 4999 (or 4999H) Thesis Research (up to 4 semester credit hours can counts towards the 30 credit hour major requirement and can count as one of the three required electives if not used as a substitute for the MG lab requirement)
MG 5193 Individual Studies (1-3) (No more than 3 semester credit hours can count towards the major)
MG 5194 Group Studies (1-3) (No more than 3 semester credit hours can count towards the major)
MG 5632 Insect Molecular Genetics (2)
MG 5643 Plant Anatomy (3)

MG 5650 Analysis and Interpretation of Biological Data (3)
MG 5797 Study at a Foreign Institution (1-15) (No more than 3 semester credit hours of 5797 or 5798 can count towards the major)
MG 5798 Study Tour: Domestic (1-15) (No more than 3 semester credit hours of 5797 or 5798 can count towards the major)

Completion of the MG Core (MG 4606, 5607, 5608, and 5640) is a prerequisite for most 6000 level MG courses.

MG 6623 Genetics and Genomics (2)
MG 6625 Plant Metabolic Engineering (2)
MG 6630 Plant Physiology (3)
MG 6700 Systems of Genetic Analysis (3)
MG 6701 DNA Transactions and Gene Regulation (4)
MG 6705 Advances in Cell Biology (2)
MG 6715 Developmental Genetics (2)
MG 6725 Circadian Biology (2)
MG 6733 Human Genetics (2)
MG 6735 Plant Biochemistry (3)
MG 6741 Reproductive Biology of Flowering Plants (2)
MG 6770 Molecular Biology of Animal and Plant Viruses (4)
MG 6795 Special Topics in Molecular Genetics (1-3)
MG 6796 Current Topics in Signal Transduction (2)

Biochem 4521 Introduction to Biological Chemistry Laboratory (4)

EEOB 4520 Comparative Physiology (3)

Micro 5000 General Microbiology (5)
Micro 5081 Microbial Genetics (3)
Micro 5082 Molecular Microbiology Lab (3)
Micro 5161H Bioinformatics and Molecular Microbiology (3)
Micro 6080 Advanced Microbial Genetics (3)

Other elective courses may be substituted with permission of advisor.

Course Listing and Curriculum Map for the Molecular Genetics BS Major

Required prerequisites for the major

(do not count towards hours in the major)

Requirements	Semester Course Number	Course Title	Semester Credit Hours		Quarter Equivalent Course Number	Quarter Credit Hours	Notes	Program Goals
Biology	Bio 1113	Intro Biology	4		Bio 113	5	Expanded content	1, 2, 3, 4, 5
	Bio 1114	Intro Biology	4		Bio 114	5	Expanded content	1, 2, 3, 4, 5
Chemistry	Chem 1210, 1220	General Chemistry I & II	10		Chem 121, 122, 123	15	Simple conversion	1
	Chem 2510, 2520	Organic Chemistry I & II	8		Chem 251, 252	8	Increase in the organic chemistry requirement	1
	Chem 2540, 2550	Organic Chemistry Lab I & II	4		Chem 245, 246	4	Increase in the organic chemistry lab requirement	1, 5
Math	Math 1150	Pre-Calculus	5		Math 150	5	Or appropriate placement level	1
	Math 1156	Calculus for Biological Sciences	5		Math 151, 152	10	Either version is acceptable	1, 3, 5 ----------

	-----OR----- Math 1151	-----OR----- Calculus	-----OR----- 5					1, 5
Physics	Physics 1200, 1201	General Physics	10		Physics 111, 112, 113	15	Simple conversion	1

(Honors or more advanced versions of these prerequisite courses for the major can be substituted.)

Core major requirements in the department

Semester Course Number	Course Title	Semester Credit Hours		Quarter Equivalent Course Number	Quarter Credit Hours	Notes	Program Goals
Mol Gen 4606	Molecular Genetics	4		Mol Gen 605, 606	8	Merged content of MG605 and 606; some content moved to MG 5608 (eukaryotic gene regulation); population and quantitative genetics removed and met by addition of MG 5640 to the core	1*, 2*, 3*, 4*, 5*
Mol Gen 5607 -----OR------ Mol Gen	Cell Biology ------OR------ Honors Cell	3 ----OR----- 4		Mol Gen 607 and PCMB 648	3 4	Merged content of Mol Gen 607 and PCMB 648 with elimination of redundant subject matter ----------OR----------	1*, 2*, 3*, 4*, 5*

5607E	Biology					Embedded Honor's version includes an extra 55-min recitation with instructor	
Mol Gen 5608 -----OR------ Mol Gen 5608E	Genes and Development -----OR------ Honors Genes and Development	3 ----OR----- 4		Mol Gen 608	3	Enhanced content and addition of material previously taught in MG 605, 606 ----------OR---------- Embedded Honor's version includes an extra 55-min recitation with instructor	1*, 2*, 3*, 4*, 5*
Mol Gen 5640	Genetic Basis of Evolution	2		Mol Gen 640	5	This course was previously not part of the core; reduction in content	1*, 2*, 3*, 4*, 5*
Mol Gen 5601 -----OR------ Mol Gen 5602	Molecular Genetics Lab -------OR-------- Cell and Developmental Biology Lab	3-4 -----OR---- 3-4		Mol Gen 601 ----------OR---------- Mol Gen 602	5 ---OR--- 5	Enhanced content for both Mol Gen 5601 or 5602; 3 semester credit hour version limited to May-mester or summer offerings	2*, 3*, 4*, 5*, 6*, 7*

Core major requirements outside the department

Semester Course Number	Course Title	Semester Credit Hours		Quarter Equivalent Course Number	Quarter Credit Hours	Notes	Program Goals

Biochem 4511 ----OR----- Biochem 5613 AND 5614	Biochemistry -------OR-------- Biochemistry and Molecular Biology	4 ----OR---- 3 AND 3		Biochem 511 ----------OR---------- Biochem 613 AND 614	5 ---OR--- 4 AND 4	Enhanced content _____ Simple conversion	1*, 2*, 3*, 4*, 5*

Elective Courses in Molecular Genetics that count towards the major

Semester Course Number	Course Title	Semester Credit Hours		Quarter Equivalent Course Number	Quarter Credit Hours	Notes	Program Goals
Mol Gen 2220H	Intro to Molecular Life Sciences: Research Opportunities and Career Options	1		Mol Gen 220H	1	Expanded content.	1, 2
Mol Gen 4503	Molecular Genetics Writing Project	1		Mol Gen 503	2	Same content	6**, 7**, 8**
Mol Gen 4591S	DNA Fingerprinting Workshops in	1		Mol Gen 591	2	Same content	6**, 7**

	Columbus Public Schools						
Mol Gen 4998 (or 4998H)	Undergraduate Research in Molecular Genetics	1-5		Mol Gen 699	1-18	Repeatable; not more than 4 semester credit hours of 4998 and 4999 can count towards the major	3**, 4**, 5**, 6**, 7**, 8**
Mol Gen 4999 (or 4999H)	Thesis Research in Molecular Genetics	1-5		Mol Gen 783H	3-5	Repeatable; not more than 4 semester credit hours of 4998 and 4999 can count towards the major	3**, 4**, 5**, 6**, 7**, 8**
Mol Gen 5193	Individual Studies	1-3		Mol Gen 693 and PCMB 693	1-10	Repeatable; not more than 3 semester credit hours can count towards a major	6**, 7**, 8**
Mol Gen 5194	Group Studies	1-3		PCMB 694	1-5	Repeatable; not more than 3 semester credit hours can count towards a major	2**, 8**
Mol Gen 5632	Insect Molecular Genetics	2		Mol Gen 632	3	Same content	2**,8*
Mol Gen 5643	Plant Anatomy	3		PCMB 643	5	Same content	2**, 8**
Mol Gen 5650	Analysis and Interpretation of Biological Data	3		Mol Gen 650	5	Same content	3**, 5**
Mol Gen 5797	Study at a Foreign Institution	1-15		PCMB 698.02	1-15	Not more than 3 semester credit hours of either 5797 or 5798 can counts towards the major	6*, 7*, 8*

Mol Gen 5798	Study Tour: Domestic	1-15		PCMB 698.01	1-15	Not more than 3 semester credit hours of either 5797 or 5798 can counts towards the major	6*, 7*, 8*
Mol Gen 6623	Genetics and Genomics	2		PCMB 623	4	Similar content	2**,3**, 4**, 8**

Mol Gen 6625	Plant Metabolic Engineering	2		PCMB 625	3	Same content	2**, 3*, 4**, 8**
Mol Gen 6630	Plant Physiology	3		PCMB 630 and 631	3 + 3	Merging of 630 and 631 with reduction in content	2**, 3**, 4**, 8**
Mol Gen 6700	Systems of Genetic Analysis	3		Mol Gen 700	3	Enhanced content	2**, 3**, 4**, 8**
Mol Gen 6701	DNA Transactions and Gene Regulation	4		Mol Gen 701 and Biochem 702	3 + 3	Merged content	2**, 3**, 4**, 8**
Mol Gen 6705	Advances in Cell Biology	2		Mol Gen 705	3	7 week course; same content	2**, 3**, 4**, 8**
Mol Gen 6715	Developmental Genetics	2		Mol Gen 715	3	7 week course; same content	2**, 3**, 4**, 8**
Mol Gen 6725	Circadian Biology	2		PCMB 725	3	Same content	2**, 3**, 4**, 8**
Mol Gen 6733	Human Genetics	2		Mol Gen 733	3	Same content	2**, 3**, 4**, 8**
Mol Gen 6735	Plant Biochemistry	3		PCMB 735 and 736	3 + 3	Merging of 735 and 736 with reduction in content	2**, 3**, 4**, 8**
Mol Gen 6741	Reproductive Biology of Flowering Plants	2		PCMB 741	3	Same content	2**, 3**, 4**, 8**

Mol Gen 6770	Molecular Biology of Animal and Plant Viruses	4		Mol Gen 770	3	Enhanced content; this class will have merged content from Mol Gen 770, MVIMG/VBS 754 and MVIMG/VBS 841	2**, 3**, 4**, 8**
Mol Gen 6795	Special Topics in Molecular Genetics	1-3		Mol Gen 795 or PCMB 795	1-3	Repeatable; not more than 3 semester credit hours can count towards the major	2**, 3**, 4**, 6**, 8**
Mol Gen 6796	Current Topics in Signal Transduction	2		PCMB 796	3	Same content	2**, 3**, 4**, 6**, 8**

Elective courses outside the department that count towards the major

Semester Course Number	Course Title	Semester Credit Hours		Quarter Equivalent Course Number	Quarter Credit Hours	Notes	Program Goals
Biochem 4521	Introduction to Biological Chemistry Laboratory	4		Biochem 521	5	Enhanced content; honors version also available and acceptable	2*, 3*, 4*, 5*, 6*, 7*
EEOB 4520	Comparative Physiology	3		EEOB 410	4	New course title, enhanced content	1*, 3, 5
Micro 5000	General Microbiology	5		Micro 520 and 521	10	Combined aspects of 520 and 521 with reduction in content	1*, 2, 3, 4, 5
Micro 5081	Microbial Genetics	3		Micro 581.01	3	Enhanced content	1*, 2*, 3*, 4*, 5*
Micro 5082	Molecular Microbiology Lab	3		Micro 581.02	3	Combined content of 581.02 and 522.02	2*, 3*, 4*, 5*, 6*, 7*
Micro 5161H	Bioinformatics and Molecular Microbiology	3		Micro 610H	5	Direct conversion	2**, 3**, 4**, 8**
Micro 6080	Advanced Microbial Genetics	3		Micro 680	3	Expanded content	2**, 3**, 4**, 8**

1. Undergraduate Molecular Genetics majors acquire a basic mastery of fundamental concepts of biology, chemistry, mathematics, physics, and the scientific method.

2. Undergraduate Molecular Genetics majors acquire a basic mastery of fundamental areas of molecular genetics, including transmission genetics, the central dogma of molecular biology, regulation of gene expression, quantitative and population genetics, genomics, recombinant DNA and biotechnology, and cell and developmental biology.

3. Undergraduate Molecular Genetics majors develop analytical and problem solving skills in areas of genetics and molecular biology.

4. Undergraduate Molecular Genetics majors acquire a basic mastery of experimental techniques and approaches in genetics and molecular biology.

5. Undergraduate Molecular Genetics majors acquire a basic mastery of data analysis and statistical approaches used in genetics.

6. Undergraduate Molecular Genetics majors effectively communicate their understanding of genetics and molecular biology both orally and in writing.

7. Undergraduates majors participate in academic research and/or outreach activities that are consistent with their interests and postgraduate plans.

8. Undergraduate majors acquire expertise relevant to their chosen area of specialization.

Program learning goals with no asterisk = beginner's level; * = intermediate level; ** = advanced level

MG Undergraduate Major with a Plant Cellular and Molecular Biology (PCMB) Specialization - Semesters

Part A. Required Prerequisites (do not count toward the 30 hour major)

1. Bio 1113 (4) AND 1114 (4)
2. Chem 1210 (5) AND Chem 1220 (5)
3. Chem 2510 (4), 2520 (4), 2540 (2), and 2550 (2)
4. Math 1150 Pre-Calculus (5) AND Math 1156 Calculus for Biological Sciences (5) OR Math 1151 (5)
5. Physics 1200 (5) AND 1201 (5)

Honors or more advanced versions for any of these courses are acceptable.

Part B. Core Requirements (the core comprises at least 20 credit hours of the 30 credit hour major):

1. Biochemistry 4511 (4) OR
   Biochemistry 5613 (3) AND Biochemistry 5614 (3)
2. MG 4606 Molecular Genetics (4).
3. MG 5607 Cell Biology (3) or MG5607E (4)
4. MG 5608 Genes and Development (3) or MG5608E (4)
5. MG 3300 General Plant Biology (3)
6. MG 3436 Introductory Plant Physiology (3)

Part C. Electives (choose at least 3 electives from the following list; electives plus the core must total at least 30 credit hours):

MG 4503 Molecular Genetics Writing Project (on a PCMB topic) (1)
MG 4998 (or 4998H) Undergraduate Research and/or MG 4999 (or 4999H) Thesis Research (up to 4 semester credit hours of research in a plant lab can count towards the PCMB specialization)
MG 5193 Individual Studies (on a PCMB topic) (1-3) (No more than 3 semester credit hours can count towards the major)
MG 5194 Group Studies (on a PCMB topic) (1-3) (No more than 3 semester credit hours can count towards the major)
MG 5601 Molecular Genetics Lab or MG 5602 Cell and Developmental Biology Lab with a plant module (3-4)
MG 5640 Evolutionary Genetics (2)
MG 5643 Plant Anatomy (3 semester hours)
MG 5797 Study at a Foreign Institution (1-15) with a plant focus (No more than 3 semester credit hours of 5797 or 5798 can count towards the major)
MG 5798 Study Tour: Domestic (1-15) with a plant focus (No more than 3 semester credit hours of 5797 or 5798 can count towards the major)

MG 6625 Plant Metabolic Engineering (2)
MG 6630 Plant Physiology (3)
MG 6735 Plant Biochemistry (3)
MG 6741 Reproductive Biology of Flowering Plants (2)
MG 6795 Special Topics in Molecular Genetics (on a PCMB topic) (1-3)

Plant Pathology 703 Successor: Agricultural Genomics: Principles and Applications (2?)

Other elective courses may be substituted with permission of advisor.

Course Listing and Curriculum Map for the Molecular Genetics BS Major

With Specialization in PCMB

Required prerequisites for the major

(do not count towards hours in the major)

Requirements	Semester Course Number	Course Title	Semester Credit Hours		Quarter Equivalent Course Number	Quarter Credit Hours	Notes	Program Goals
Biology	Bio 1113	Intro Biology	4		Bio 113	5	Expanded content	1, 2, 3, 4, 5
	Bio 1114	Intro Biology	4		Bio 114	5	Expanded content	1, 2, 3, 4, 5
Chemistry	Chem 1210, 1220	General Chemistry I & II	10		Chem 121, 122, 123	15	Simple conversion	1
	Chem 2510, 2520	Organic Chemistry I & II	8		Chem 251, 252	8	Increase in the organic chemistry requirement	1
	Chem 2540, 2550	Organic Chemistry Lab I & II	4		Chem 245, 246	4	Increase in the organic chemistry lab requirement	1, 5
Math	Math 1150	Pre-Calculus	5		Math 150	5	Or appropriate placement level	1
	Math 1156	Calculus for	5		Math 151, 152	10	Either version	1, 3, 5

	-----OR----- Math 1151	Biological Sciences -----OR----- Calculus	-----OR----- 5				is acceptable	---------- 1, 5
Physics	Physics 1200, 1201	General Physics	10		Physics 111, 112, 113	15	Simple conversion	1

(Honors or more advanced versions of these prerequisite courses for the major can be substituted.)

Core major requirements in the department

Semester Course Number	Course Title	Semester Credit Hours		Quarter Equivalent Course Number	Quarter Credit Hours	Notes	Program Goals
Mol Gen 4606	Molecular Genetics	4		Mol Gen 605, 606	8	Merged content of MG605 and 606; some content moved to MG 5608 (eukaryotic gene regulation); population and quantitative genetics removed and met by addition of MG 5640 to the core	1*, 2*, 3*, 4*, 5*
Mol Gen 5607	Cell Biology	3		Mol Gen 607 and PCMB 648	3 4	Merged content of Mol Gen 607 and PCMB 648 with elimination of redundant	1*, 2*, 3*, 4*, 5*

-----OR------ Mol Gen 5607E	------OR------ Honors Cell Biology	----OR----- 4				subject matter ----------OR---------- Embedded Honor's version includes an extra 55-min recitation with instructor	
Mol Gen 5608 -----OR------ Mol Gen 5608E	Genes and Development -----OR------ Honors Genes and Development	3 ----OR----- 4		Mol Gen 608	3	Enhanced content and addition of material previously taught in MG 605, 606 ----------OR---------- Embedded Honor's version includes an extra 55-min recitation with instructor	1*, 2*, 3*, 4*, 5*
Mol Gen 3300	General Plant Biology	3		PCMB 300	5	Same content	1*, 2*, 9*
Mol Gen 3436	Introductory Plant Physiology	3		PCMB 436	5	Same content	1*, 2*, 9*

Core major requirements outside the department

Semester Course Number	Course Title	Semester Credit Hours		Quarter Equivalent Course Number	Quarter Credit Hours	Notes	Program Goals
Biochem 4511 ----OR----- Biochem	Biochemistry -------OR-------- Biochemistry	4 ----OR---- 3		Biochem 511 ----------OR---------- Biochem 613	5 ---OR--- 4	Enhanced content ----------	1*, 2*, 3*, 4*, 5*

5613 AND Biochem 5614	and Molecular Biology	AND 3		AND Biochem 614	AND 4	Enhanced content	

Elective Course in Molecular Genetics that count towards the major

Semester Course Number	Course Title	Sem Credit Hours		Quarter Equivalent Course Number	Quarter Credit Hours	Notes	Program Goals
Mol Gen 4503	Molecular Genetics Writing Project	1		Mol Gen 503	2	Must be on a plant topic to count towards the PCMB specialization	6**, 7**, 8**, 9*
Mol Gen 4998 (or 4998H)	Undergraduate Research in Molecular Genetics	1-5		Mol Gen 699	1-18	Repeatable; not more than 4 semester credit hours of 4998 and 4999 can count towards the major; must be on a plant topic to count towards the PCMB specialization	3**, 4**, 5**, 6**, 7**, 8**
Mol Gen 4999 (or 4999H)	Thesis Research in Molecular Genetics	1-5		Mol Gen 783H	3-5	Repeatable; not more than 4 semester credit hours of 4998 and 4999 can count towards the major; must be on a plant topic to count towards the PCMB specialization	3**, 4**, 5**, 6**, 7**, 8**

Mol Gen 5193	Individual Studies	1-3		Mol Gen 693 and PCMB 693	1-10	Repeatable; not more than 3 semester credit hours can count towards a major; must be on a plant topic to count towards the PCMB specialization	6**, 7**, 8**, 9**
Mol Gen 5194	Group Studies	1-3		PCMB 694	1-5	Repeatable; not more than 3 semester credit hours can count towards a major; must be on a plant topic to count towards the PCMB specialization	2**, 8**, 9**
Mol Gen 5601 -----OR------ Mol Gen 5602	Molecular Genetics Lab -------OR-------- Cell and Developmental Biology Lab	3-4 -----OR-- -- 3-4		Mol Gen 601 ----------OR---------- Mol Gen 602	5 ---OR--- 5	Enhanced content for both Mol Gen 5601 or 5602; 3 semester credit hour version limited to May-mester or summer offerings; lab must have a plant module to count towards the PCMB specialization	2*, 3*, 4*, 5*, 6*, 7*, 9* ----OR---- 2*, 3*, 4*, 5*, 6*, 7*, 9*
Mol Gen 5640	Genetic Basis of Evolution	2		Mol Gen 640	5	Reduction in content	1*, 2*, 3*, 4*, 5*
Mol Gen 5643	Plant Anatomy	3		PCMB 643	5	Same content	2**, 8**, 9**
Mol Gen 5797	Study at a Foreign Institution	1-15		PCMB 698.02	1-15	Not more than 3 semester credit hours of either 5797 or 5798 can counts towards the major; must have a plant focus to count	6**, 7**, 8**, 9**

						towards the PCMB specialization	
Mol Gen 5798	Study Tour: Domestic	1-15		PCMB 698.01	1-15	Not more than 3 semester credit hours of either 5797 or 5798 can counts towards the major must have a plant focus to count towards the PCMB specialization	6**, 7**, 8**, 9**
Mol Gen 6625	Plant Metabolic Engineering	2		PCMB 625	3	Same content	2**, 3**, 4**, 8**, 9**
Mol Gen 6630	Plant Physiology	3		PCMB 630 and 631	3 + 3	Merging of 630 and 631 with reduction in content	2**, 3**, 4**, 8**, 9**
Mol Gen 6735	Plant Biochemistry	3		PCMB 735 and 736	3 + 3	Merging of 735 and 736 with reduction in content	2**, 3**, 4**, 8*,* 9**
Mol Gen 6741	Reproductive Biology of Flowering Plants	2		PCMB 741	3	Same content	2**, 3**, 4**, 8**, 9**
Mol Gen 6795	Special Topics in Molecular Genetics	1-3		Mol Gen 795 or PCMB 795	1-3	Repeatable; not more than 3 semester credit hours can count towards the major; must be on a plant topic to count towards the PCMB specialization	2**, 3**, 4**, 8**, 9**

Elective Course outside Molecular Genetics that count towards the major

Semester Course Number	Course Title	Sem Credit Hours		Quarter Equivalent Course Number	Quarter Credit Hours	Notes	Program Goals
Plant Pathology 703 Successor	Agricultural Genomics: Principles and Applications	2		Plant Pathology 703	3		2**, 3**, 4**, 8**, 9**

1. Undergraduate Molecular Genetics majors acquire a basic mastery of fundamental concepts of biology, chemistry, mathematics, physics, and the scientific method.

2. Undergraduate Molecular Genetics majors acquire a basic mastery of fundamental areas of molecular genetics, including transmission genetics, the central dogma of molecular biology, regulation of gene expression, quantitative and population genetics, genomics, recombinant DNA and biotechnology, and cell and developmental biology.

3. Undergraduate Molecular Genetics majors develop analytical and problem solving skills in areas of genetics and molecular biology.

4. Undergraduate Molecular Genetics majors acquire a basic mastery of experimental techniques and approaches in genetics and molecular biology.

5. Undergraduate Molecular Genetics majors acquire a basic mastery of data analysis and statistical approaches used in genetics.

6. Undergraduate Molecular Genetics majors effectively communicate their understanding of genetics and molecular biology both orally and in writing.

7. Undergraduates majors participate in academic research and/or outreach activities that are consistent with their interests and postgraduate plans.

8. Undergraduate majors acquire expertise relevant to their chosen area of specialization.

9. Undergraduate majors with a PCMB specialization acquire mastery of concepts and approaches fundamental and/or unique to plant biology.

Program learning goals with no asterisk = beginner's level; * = intermediate level; ** = advanced level

Molecular Genetics Undergraduate Major
Sample Semester Program

Year 1			
Autumn:		**Spring:**	
Biology 1113	4	Biology 1114	4
Chemistry 1210	5	Chemistry 1220	5
Math 1150	5	Math 1156	5
A&S Survey	1	GE/Free Electives	3
Semester Total	**15**	**Semester Total**	**17**

Year 2			
Autumn:		**Spring:**	
Mol Gen 4606	4	Physics 1201	5
Chemistry 2510	4	Chemistry 2520	4
Physics 1200	5	Chemistry 2540	2
GE/Free Electives	3	GE/Free Electives	4
Semester Total	**16**	**Semester Total**	**15**

Year 3			
Autumn:		**Spring:**	
Mol Gen 5607	3	Mol Gen 5608	3
Biochemistry 4511	4	Mol Gen 5640	2
Chemistry 2550	2	Mol Gen 5601 or 5602	4
GE/Free Electives	6	GE/Free Electives	6
Semester Total	**15**	**Semester Total**	**15**

Year 4			
Autumn:		**Spring:**	
Major Elective I	3	Major Elective III	3
Major Elective II	3	GE/Free Electives	11
GE/Free Electives	8		
Semester Total	**14**	**Semester Total**	**14**

GRAND TOTAL: **121 Semester Credit Hours**

Molecular Genetics Undergraduate Major with PCMB Specialization Sample Semester Program

Year 1			
Autumn:		**Spring:**	
Biology 1113	4	Biology 1114	4
Chemistry 1210	5	Chemistry 1220	5
Math 1150	5	Math 1156	5
A&S Survey	1	GE/Free Electives	3
Semester Total	**15**	**Semester Total**	**17**

Year 2			
Autumn:		**Spring:**	
Mol Gen 4606	4	Physics 1201	5
Chemistry 2510	4	Chemistry 2520	4
Physics 1200	5	Chemistry 2540	2
GE/Free Electives	3	GE/Free Electives	3
		Mol Gen 3300	3
Semester Total	**16**	**Semester Total**	**17**

Year 3			
Autumn:		**Spring:**	
Mol Gen 5607	3	Mol Gen 5608	3
Biochemistry 4511	4	Mol Gen 3436	3
Chemistry 2550	2	GE/Free Electives	8
GE/Free Electives	5		
Semester Total	**14**	**Semester Total**	**14**

Year 4			
Autumn:		**Spring:**	
Major Elective (PCMB) I	3	Major Elective (PCMB) III	3
Major Elective (PCMB) II	3	GE/Free Electives	11
GE/Free Electives	8		
Semester Total	**14**	**Semester Total**	**14**

GRAND TOTAL: 121 Semester Credit Hours

Molecular Genetics Undergraduate Major
Sample Quarter Program

Year 1

Autumn:		Winter:		Spring:	
Chem 121	5	Chem 122	5	Chem 123	5
Math 150	5	Math 151	5	Math 152	5
GEC		Bio 113	5	Bio 114	5
				GEC	

Year 2

Autumn:		Winter		Spring:	
Chem 251	4	Chem 252	4	Chem 246	2
Physics 111	5	Physics 112	4	Physics 113	5
GEC		Chem 245	2	GEC	
GEC		GEC		GEC	

Year 3

Autumn:		Winter:		Spring:	
Biochem 511	5	Mol Gen 605	4	Mol Gen 606	4
GEC		GEC		Mol Gen 602	5
GEC		GEC		Elective	
				GEC	

Year 4

Autumn:		Winter:		Spring:	
Mol Gen 607	3	Mol Gen 608	3	Major Elective	
GEC		GEC		Major Elective	
Major Elective		Major Elective		Elective	
Elective		Elective			

Molecular Genetics Undergraduate Major
Sample Curriculum for Students Graduating 2013

Year 1

Autumn:		Winter:		Spring:	
Chem 121	5	Chem 122	5	Chem 123	5
Math 150	5	Math 151	5	Math 152	5
GEC		Bio 113	5	Bio 114	5
				GEC	

Year 2

Autumn:		Winter		Spring:	
Chem 251	4	Chem 252	4	Chem 246	2
Physics 111	5	Physics 112	4	Physics 113	5
GEC		Chem 245	2	GEC	
GEC		GEC		GEC	

Year 3

Autumn:		Winter:		Spring:	
Biochem 511	5	Mol Gen 605	4	Mol Gen 606	4
GEC		GEC		Mol Gen 602	5
GEC		GEC		Elective	
				GEC	

Year 4

Autumn:		Spring:	
Mol Gen 5607	3	Mol Gen 5608	3
Major Elective I	3	Major Elective III	3
Major Elective II	3	Major Elective IV	3
GE/Free Electives	9	GE/Free Electives	9
Semester Total	**18**	**Semester Total**	**18**

Molecular Genetics Undergraduate Major
Sample Curriculum for Students Graduating 2014

Year 1					
Autumn:		**Winter:**		**Spring:**	
Chem 121	5	Chem 122	5	Chem 123	5
Math 150	5	Math 151	5	Math 152	5
GEC		Bio 113	5	Bio 114	5
				GEC	

Year 2					
Autumn:		**Winter**		**Spring:**	
Chem 251	4	Chem 252	4	Elective	
Physics 111	5	Physics 112	4	Physics 113	5
GEC		GEC		GEC	
GEC				GEC	

Year 3			
Autumn:		**Spring:**	
Biochemistry 4511	4	Mol Gen 5640	2
Chemistry 2540	2	Mol Gen 5601 or 5602	4
Mol Gen 5606	4	Chemistry 2550	2
GE/Free Electives	8	GE/Free Elective	10
Semester Total	**18**	**Semester Total**	**18**

Year 4			
Autumn:		**Spring:**	
Mol Gen 5607	3	Mol Gen 5608	3
Major Elective I	3	Major Elective III	3
Major Elective II	3	GE/Free Electives	12
GE/Free Electives	9		
Semester Total	**18**	**Semester Total**	**18**

Molecular Genetics Undergraduate Major
Sample Curriculum for Students Graduating 2015

Year 1

Autumn:		Winter:		Spring:	
Chem 121	5	Chem 122	5	Chem 123	5
Math 150	5	Math 151	5	Math 152	5
GEC	5	Bio 113	5	Bio 114	5

Year 2

Autumn:		Spring:	
Mol Gen 4606	4	Physics 1201	5
Chemistry 2510	4	Chemistry 2520	4
Physics 1200	5	Chemistry 2540	2
GE/Free Electives	3	GE/Free Electives	5
Semester Total	**16**	**Semester Total**	**16**

Year 3

Autumn:		Spring:	
Mol Gen 5607	3	Mol Gen 5608	3
Biochemistry 4511	4	Mol Gen 5640	2
Chemistry 2550	2	Mol Gen 5601 or 5602	4
GE/Free Electives	6	GE/Free Electives	6
Semester Total	**15**	**Semester Total**	**15**

Year 4

Autumn:		Spring:	
Major Elective I	3	Major Elective III	3
Major Elective II	3	GE/Free Electives	11
GE/Free Electives	8		
Semester Total	**14**	**Semester Total**	**14**

THE OHIO STATE UNIVERSITY

QUARTERS

Major Program Form

Colleges of the Arts and Sciences

Name_____ Major Molecular Genetics
Last First Middle

Student ID #_____ Degree Sought: BA ___ BS _X_ BAJur ___

Local Address_____(Zip)_____

Phone: resident _____ Expected Date of Graduation_____
(Quarter and Year)

business _____ Email Address_____

Have you filed a degree application in the College of Arts and Sciences: ☐ Yes ☐ No
(Note: This form is **NOT** A degree application.)

If completing two majors, list both below and file a separate from for each one:

1) _____ 2) _____

Part A. Required Prerequisites (and/or supplementary requirements)

Courses	Hours	Grade	Courses	Hours	Grade
Biology 113, 114	10		Chemistry 245, 246	4	
Chemistry 121,122,123	15		Math 148,150,151,152		
Chemistry 251,252	8		Physics 111,112,113	15	

Part B. Major Program (Minimum grade of "C-"required. Minimum gpa of "C" (2.00)
Core Requirements (Substitutions are rarely if ever permitted)

Courses	Hours	Grade	Courses	Hours	Grade
Biochemistry 511	5		Molecular Genetics 608	3	
Molecular Genetics 605	4		Molecular Genetics 601	5	
Molecular Genetics 606	4				
Molecular Genetics 607	3				

Additional Major Program Courses

Courses	Hours	Grade	Courses	Hours	Grade

Total of Part B only:

Check whether this is: ☐ original ☐ revision

See back for information about major programs
Distribution: One copy each – Faculty adviser
Student
College Office
130 Denney Hall

_____
Signature of faculty adviser

_____
Name of Faculty Adviser (Please Print)

Molecular Genetics 292-8084
Department Campus Phone

_____
Date

The Ohio State University
Form 9988 – /rev. 2/03

THE OHIO STATE UNIVERSITY

SEMESTERS

Major Program Form

Colleges of the Arts and Sciences

Name_____ Major Molecular Genetics
Last First Middle

Student ID_____ Degree Sought: BA ___ BS _X_ BAJur ___

Phone: resident _____ Expected Date of Graduation_____
(Quarter and Year)

business _____ Email Address_____

Have you filed a degree application in the College of Arts and Sciences: ☐ Yes ☐ No
(Note: This form is **NOT** A degree application.)

If completing two majors, list both below and file a separate from for each one:

1) _____ 2) _____

Part A. Required Prerequisites (and/or supplementary requirements)

Courses	Hours	Grade	Courses	Hours	Grade
Biology 1113, 1114	**8**		**Chemistry 2540, 2550**	**4**	
Chemistry 1210, 1220	**10**		**Math 1150, plus 1156 or 1151**	**10**	
Chemistry 2510, 2520	**8**		**Physics 1200, 1201**	**10**	

Honors or more advanced offerings of these courses may be substituted.

Part B. Major Program (Minimum grade of "C-"required. Minimum GPA of "C" (2.00)
Core Requirements (Substitutions are rarely if ever permitted)

Courses	Hours	Grade	Courses	Hours	Grade
Biochemistry 4511 (or 5613 and 5614)	**4**		**Molecular Genetics 5608**	**3**	
Molecular Genetics 4606	**4**		**Molecular Genetics 5640**	**2**	
Molecular Genetics 5607	**3**		**Molecular Genetics 5601 or 5602 (or 4 hours of MG 498 or 4999)**	**3-4**	

Additional Major Program Courses (choose at least 3 electives from approved list)

Courses	Hours	Grade	Courses	Hours	Grade

Total of Part B only (must total at least 30 semester credit hours):

Check whether this is: ☐ original ☐ revision

See back for information about major programs
Distribution: One copy each – Faculty adviser
Student
College Office
130 Denney Hall

_____
Signature of faculty adviser

_____
Name of Faculty Adviser (Please Print)

Molecular Genetics 292-8084
Department Campus Phone

_____
Date

THE OHIO STATE UNIVERSITY

SEMESTERS

Major Program Form

Colleges of the Arts and Sciences

Name_____ Major **Molecular Genetics with PCMB Specialization**
Last First Middle

Student ID_____ Degree Sought: BA ___ BS _X_ BAJur ___

Phone: resident _____ Expected Date of Graduation_____
(Quarter and Year)

business _____ Email Address_____

Have you filed a degree application in the College of Arts and Sciences: ☐ Yes ☐ No
(Note: This form is **NOT** A degree application.)

If completing two majors, list both below and file a separate from for each one:

1) _____ 2) _____

Part A. Required Prerequisites (and/or supplementary requirements)

Courses	Hours	Grade	Courses	Hours	Grade
Biology 1113, 1114	8		Chemistry 2540, 2550	4	
Chemistry 1210, 1220	10		Math 1150, plus 1156 or 1151	10	
Chemistry 2510, 2520	8		Physics 1200, 1201	10	

Honors or more advanced offerings of these courses may be substituted.

Part B. Major Program (Minimum grade of "C-"required. Minimum GPA of "C" (2.00)
Core Requirements (Substitutions are rarely if ever permitted)

Courses	Hours	Grade	Courses	Hours	Grade
Biochemistry 4511 (or 5613 and 5614)	4		Molecular Genetics 5608	3	
Molecular Genetics 4606	4		Molecular Genetics 3300	3	
Molecular Genetics 5607	3		Molecular Genetics 3436	3	

Additional Major Program Courses (chose at least 3 electives from approved list)

Courses	Hours	Grade	Courses	Hours	Grade

Total of Part B only (must total at least 30 semester credit hours):

Check whether this is: ☐ original ☐ revision

See back for information about major programs
Distribution: One copy each – Faculty adviser
Student
College Office
130 Denney Hall

_____
Signature of faculty adviser

_____
Name of Faculty Adviser (Please Print)

Molecular Genetics 292-8084
Department Campus Phone

_____
Date