

Appendix A1. GMB Course Requirements
(Applicable to students entering summer 2016 and later)

All students must be enrolled in a minimum of 9 credit hours per semester to be a full-time student. For 1st and 2nd year students, a reasonable course load is 11-14 credit hours per semester. Consult your DGS or PD to choose electives.

All students are required to take the following core courses: GMB 501, GMB 502, IBS 561, IBS 515, IBS 522r, and IBS 519.

In addition, students must also successfully complete the following requirements by the end of Year 2, but have some flexibility in when they choose to complete them:

1. **IBS 519 (Statistical Rigor, Reproducibility, and Experimental Design for Biomedical Data Analysis)**
This course is required for all students entering summer 2022 and later. It is also a pre-requisite for IBS 574 (Comp Bio & Bioinformatics, 4 hrs), which is *not* required, but highly recommended. IBS 519 is only offered in the fall semester.

Students may take IBS 519 in the fall semester of either the first or second year. Students with quantitative backgrounds or interested in quantitative research should plan to take IBS 519 in their first year. For other students, consultation with the Curriculum Director and IBS 519 directors is recommended to gauge preparation and guide decision-making.
2. Students must also take **one of the following courses before the end of Y2**, which are only offered in the fall semester (note: most students take one of these in Y1 and many students take more than one of these):
 - o IBS 504 (Prokaryotic Molecular Genetics, 6 hrs)
 - o IBS 560 (Model Genetic Systems, 4 hrs)
 - o IBS 746 (Graduate Human Genetics, 4 hrs)
3. Students entering summer 2022 and later are also required to take **one additional elective course**, either from the above list or from the other IBS or BIOS course offerings below (must be 4 hours and may also be achieved by taking two of the recommended 2-hour courses below). An elective outside this list requires the approval of the advisor AND the DGS.

A list of recommended electives in the basic and quantitative sciences is provided below, though students may use OPUS (<https://saprod.emory.edu/psp/saproduct/?cmd=login>) to identify other courses that meet their needs. All students are encouraged to consult with their advisor when selecting electives, and with the DGS or curriculum director if selecting electives outside of this list.

Recommended Electives	
Fall	Spring
Basic science:	
IBS 523: Cancer Biology I (4 hrs)	IBS 506R: Basic Mech.Of Neurological Disease (4 hrs)
IBS 542: Concepts of Immunology (4 hrs)	IBS 548: Biology of the Eye (4 hrs)
Quantitative science:	
EPI 556: Applied Genomic Epidemiology (2 hrs)	IBS 538/BIOS 505 – Statistics for Experimental Biology
BIOS 555: High Throughput Data Analysis (2 hrs)	IBS 574: Computational Biology and Bioinformatics (4 hrs)
IBS 741: Computational Systems Biology (2 hrs)	IBS 593: Population and Quantitative Genetics (4 hrs; offered alternate years)
	BIOS 770: Statistical Methods in Human Genetics (3 hrs; offered alternate years)

Many other BIOS classes are available that provide training in probability theory and statistical inference. For these, it is recommended that you consult with the Curriculum Director to identify appropriate choices based on your previous coursework and research needs.

Example course schedule with IBS 519 in year 1

First Year: Fall Semester Core Courses			First Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
GMB 501	Foundations of Genetics & Molecular Biology I	6	GMB 502	Foundations of Genetics & Molecular Biology II	4
IBS 519	Statistical Rigor, Reprod, Experimental...	3	IBS 561	Euk Chrom Function	4
GMB 597r	Lab Rotations	VC	GMB 597r	Lab Rotations	VC
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
^JPE 600	LGS Ethics Class	0	GMB 706	Ethical Conduct	1
	IBS 746, 560, 504, or Elective	4-6		Elective (ex. IBS 574)	VC
Second Year: Fall Semester Core Courses			Second Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 515	Topics Mol Genetics	2	IBS 522r	Grant Writing & Pro Dev	4
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 699r	Adv Graduate Research	VC (8+)	GMB 699r	Adv Graduate Research	VC (8+)
^TATT 600	TA Training	1	GMB 706	Ethical Conduct	1
	IBS 746, 560, 504, or Elective	4-6	^TATT 605	Teaching Assistantship	2
Third Year: Fall Semester Core Courses			Third Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 699r	Adv Graduate Research	VC (8+)	GMB 699r	Adv Graduate Research	VC (8+)
Fourth Year: Fall Semester Core Courses			Fourth Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 700r	Dissertation Research	VC (8+)	GMB 700r	Dissertation Research	VC (8+)

^ LGS will register you for these courses

VC = Variable credits (system defaults to 1 hour)

Example course schedule with IBS 519 in year 2

First Year: Fall Semester Core Courses			First Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
GMB 501	Foundations of Genetics & Molecular Biology I	6	GMB 502	Foundations of Genetics & Molecular Biology II	4
GMB 597r	Lab Rotations	VC	IBS 561	Euk Chrom Function	4
IBS 546r	Presenting Genetics	1	GMB 597r	Lab Rotations	VC
^JPE 600	LGS Ethics Class	0	IBS 546r	Presenting Genetics	1
	IBS 746, 560, 504, or Elective	4-6	GMB 706	Ethical Conduct	1
				Elective (ex. IBS 574)	VC
Second Year: Fall Semester Core Courses			Second Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 515	Topics Mol Genetics	2	IBS 522r	Grant Writing & Pro Dev	4
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 699r	Adv Graduate Research	VC (8+)	GMB 699r	Adv Graduate Research	VC (8+)
^TATT 600	TA Training	1	GMB 706	Ethical Conduct	1
IBS 519	Statistical Rigor, Reprod, Experimental...	3	^TATT 605	Teaching Assistantship	2
	IBS 746, 560, 504, or Elective	4-6			
Third Year: Fall Semester Core Courses			Third Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 699r	Adv Graduate Research	VC (8+)	GMB 699r	Adv Graduate Research	VC (8+)
Fourth Year: Fall Semester Core Courses			Fourth Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 700r	Dissertation Research	VC (8+)	GMB 700r	Dissertation Research	VC (8+)

^ LGS will register you for these courses

VC = Variable credits (system defaults to 1 hour)