

## Plant Breeding/Molecular Genetics Track Course Requirements

### M.S. Requirements

Number	Name	Credits	Semester
APSc 8123	Ethics	0.5	
Agro/Hort 5311	Orientation to MN Crop Production & Res. Meth.	1	Summer
Agro/Hort 8270	Seminar in Applied Plant Sciences	1	F & S
Stat 5021	Statistical Analysis	4	F & S
	Genetics Area	3	
	Molecular Genetics Area	3	
	Plant Breeding Area	3	
	Additional courses in Supporting program or minor field ( <b>excludes</b> courses in Genetics, Molecular Genetics, Plant Breeding areas)	6	
	Thesis credits	10	

### Ph.D. Requirements

Number	Name	Credits	Semester
APSc 8123	Ethics	0.5	
Agro/Hort 5311	Orientation to MN Crop Production & Res. Meth.	1 <sup>a</sup>	Summer
Agro/Hort 8270	Seminar in Applied Plant Sciences	1 <sup>b</sup>	F & S
Stat 5021	Statistical Analysis	4	F & S
Agro/Hort/Soil 8005	Supervised Teaching Experience	2	F
Agro/Hort 8280 or SAgr 8010	Current Topics in Applied Plant Sciences	1	S
	Colloquium in Sustainable Agriculture	2	F
	Genetics Area	3	
	Molecular Genetics Area	3	
	Plant Breeding Area	3	
	Additional courses in Genetics, Molecular Genetics, Plant Breeding <sup>#</sup> , and Statistics areas	9	
	Additional courses in Supporting program or minor field ( <b>excludes</b> courses in Genetics, Molecular Genetics, Plant Breeding areas)	12	
	Thesis credits	24	

<sup>a</sup> Agro/Hort 5311 is not required if already taken as part of an M.S. program.

<sup>b</sup> Thesis proposal seminar

<sup>c</sup> Agro 5021 will not count for credit as an additional course for Ph.D. students

## AREAS

### Genetics

EEB 5033, Population and Quantitative Genetics, 4 cr., Fall  
Agro 8231, Cytogenetics, 4 cr., even Fall  
GCD 8131, Advanced Genetics, 3 cr., Fall

### Molecular Genetics

GCD 4034, Molecular Genetics, 3 cr., Spring,  
Agro 8241, Mol. & Cellular Genetics of Plant Improv., 3 cr., odd Spring

### Plant Breeding

Agro 5021, Introduction to Plant Breeding, 3 cr., Fall (M.S. only)  
Agro/Hort 8201, Plant Breeding Principles I, 3 cr., odd Fall  
Agro 8202, Plant Breeding Principles II, 4 cr., even Spring

### Statistics

Agro 5121, Applied Experimental Design, 4 cr., Spring  
Stat 5301, Applied Regression Analysis, 4 cr., Fall & Spring

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## OTHER SUGGESTED COURSES

### Agroecology

SAgr 8010, Colloquium in Sustainable Agriculture, 2 cr., Fall

### Biochemistry

BioC 5401, Advanced Metabolism and its Regulation, 3 cr., Fall  
BioC 8001, Advanced Biochemistry I: Protein Structure, Function and Metabolism, 4-5 cr., Fall  
BioC 8002, Molecular Biology and Regulation of Biological Processes, 4 cr., Fall

### Biotechnology/Genetics/Genomics

PBio/PIPa 5301, Plant Genomics, 3 cr., Fall  
Hort 4071(5071), Applications of Plant Biotechnology to Crop Improvement, 3 cr., Spring(?)  
AnSc/MVB 5200 Statistical Genetics and Genomics, 4 cr., Fall  
PBio 5414, Plant Cell and Molecular Biology, 3 cr., Spring  
GCD 8121, Advanced Molecular Genetics, 3 cr.

### Evolution

EEB 5221, Molecular and Genomic Evolution, 3 cr., Spring  
Hort 8023, Evolution of Crop Plants, 2 cr., odd Fall

### Physiology

PBio 5412, Plant Physiology, 3 cr., Fall  
PBio 5416, Plant Morphology, Development, and Evolution, 4 cr., Alt. yr?  
Hort 8044, Manipulation of Plant Growth and Reproduction, 2 cr., even Spring  
Hort/Agro 8305, Ecophysiology of Plants in Natural and Managed Ecosystem, 4 cr., Fall

### Plant Pathology

EEB 5321, Plant Interactions with Animals and Microbes, 4 cr., Fall  
PIPa 5102, Epidemiology and Genetics of Host-Parasite Interactions, 3 cr., Fall  
PIPa 5103, Physiological and Molecular Plant-Microbe Interactions, 3 cr., Spring