

## **Protocols for BS/MS 4+1 Subplan (Plant Science Major) Advanced Admission Program between Plant Science (B.S.) and APS (M.S.)**

[University Catalog:](#)

### **Integrated Plant Science BS/MS Applied Plant Science - Plant Breeding**

“Sub-plan catalog description: CFANS offers an integrated Bachelor of Science (BS) in Plant Science and Master of Science (MS) in Applied Plant Sciences (Plant Breeding and Molecular Genetics track). The integrated BS/MS program offers students the opportunity to earn both degrees in five years by working toward a master's degree while simultaneously working toward their undergraduate degree. Plant Science undergraduate students in the Plant Breeding and Genetics sub-plan are welcome to apply to this program during their 3rd year of undergraduate study. During the 4th year, students take undergraduate and graduate courses concurrently and are advised by an undergraduate and graduate program advisor. Students must complete undergraduate degree requirements before the end of their fourth year. Students in this program will complete the 120 undergraduate credits required for a BS degree in Plant Science by the end of the 4th year and must be awarded an undergraduate degree at the 4th year mark or earlier. During the 4th and 5th years, student will complete 30 graduate credits and a Plan A or B research project with a final oral defense as required for the Applied Plant Sciences MS degree. Student cannot double count credits to meet credit requirements for both the undergraduate and graduate degrees.”

**NOTE:** Students will take all courses in years 1 to 4 at the undergraduate tuition rate.

### **Application Procedures.**

Students interested in this subplan must apply in year 3 for graduate program admission into the Applied Plant Sciences (APS) Graduate Program, the Plant Breeding/Molecular Genetics MS track using this [link](#).

Students should be aware that the application process and potential final acceptance into the graduate program takes ~1 year. The application deadline for fall admission in the following year is December 5 of each year. Thus, students in the integrated program would need to apply by December 5th of their junior year.

Students are required to take the Graduate Record Examination (GRE) as part of the application process. The GRE must be taken in time to meet the December 5 deadline in your Junior year.

Students must choose whether to pursue a [Plan A or Plan B M.S. degree](#):

- Plan A requires a minimum of 20 coursework credits and 10 thesis credits. The final examination is oral. A thesis is required for completion of the Plan A. Research may start in year 4 or summer after year 3.
- Plan B requires 30 coursework credits. The final examination is oral. Instead of a thesis, a capstone project, which is determined in consultation with the student's adviser, is required.

Students may take courses in year 4 that apply to the MS degree (see listing below) while they are still undergrads (pre-BS commencement). However, these courses cannot be used in your Plant Science BS program to avoid double counting. Students will receive coordinated undergraduate and graduate advising in year 4 and they will have a big class load in this year (undergraduate + graduate) and will take only graduate level classes in year 5.

As students go through the application process, they will be encouraged to communicate and visit with APS faculty to begin to identify prospective M.S. advisers. Students may hold a Graduate Research Assistantship only after completion of undergrad requirements by the end of year 4. Students may also be hired on with an undergraduate research appointment (no tuition benefit) in the summer after year 3 and through to the end of undergraduate requirements in year 4.

**No official graduate admission will occur until end of year 4 and completion of undergrad requirements;** admission is not guaranteed.

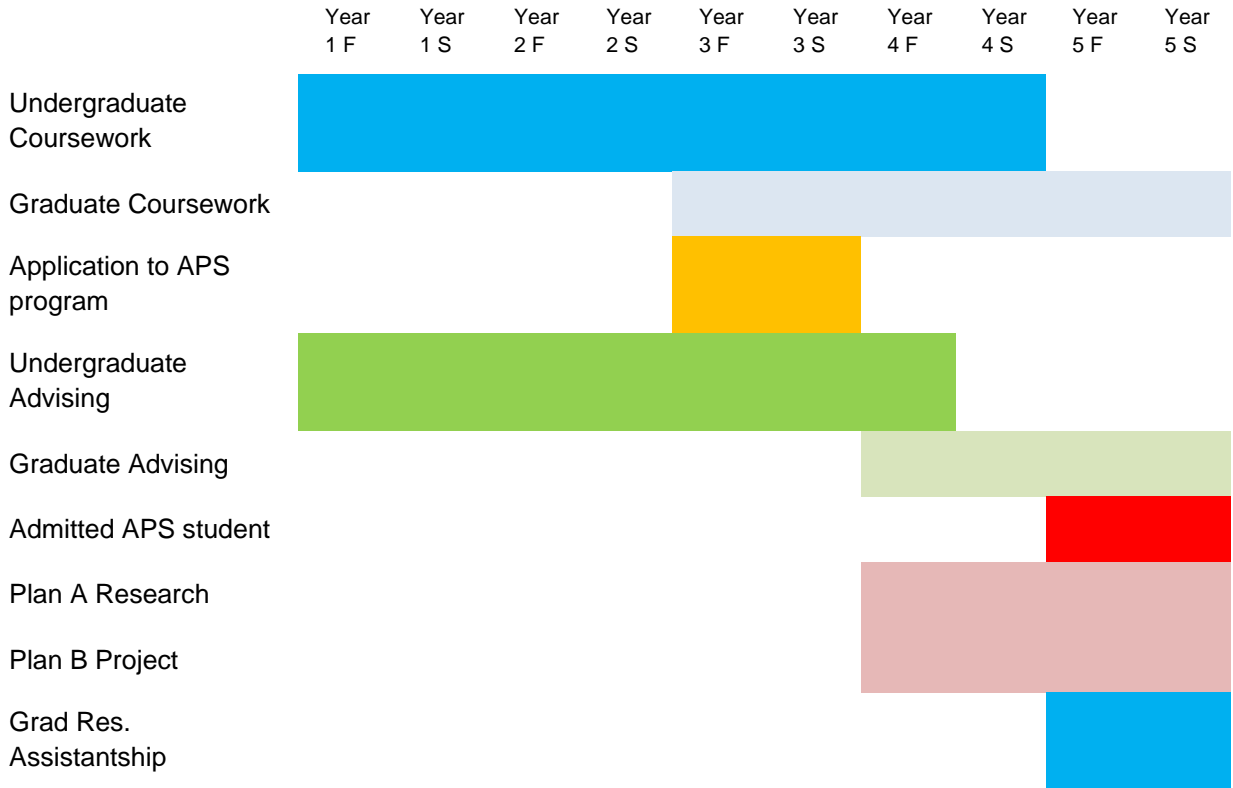
Students in this track who are accepted into the APS graduate program by year 4 would begin having graduate advising earlier, including working on Plan B project or Plan A thesis research, as soon as they are admitted. *The potential advantage to the students in the advanced enrollment track* is that they can complete all coursework in five years and begin research projects earlier, possibly reducing their total time for both degrees.

The APS program will do its best to help BS/MS Plant Science students finish a Plan A or Plan B M.S. degree program in five years. However, getting an M.S. degree in the student's 5<sup>th</sup> year is not guaranteed. An extra semester or two might be required to complete an M.S. thesis (Plan A) or coursework (Plan B), particularly if thesis field experiments are delayed or if conflicts in course scheduling arise. The total timeline for the track could be 6.5 years for the BS/MS, assuming it takes four years for completion of the BS degree in Plant Science.

If you have any questions, please contact the Graduate Program Coordinator (Lynne Medgaarden, [medga001@umn.edu](mailto:medga001@umn.edu)), the Plant Breeding/Molecular Genetics coordinator for the APS program, the Director of Graduate Studies (DGS), or the Associate DGS. Since these positions are rotated between faculty, consult the [APS website contact information](#) to contact the current faculty member occupying each role.

**STUDENT SCHEDULE FOR BS/MS 4+1 SUBPLAN**

**Parameters for Advanced Admission (“4+1”) Plan in Plant  
Science/Applied Plant Sciences**



## Sample Course Plan

Courses fulfilling BS program of study requirements - **bold**

Courses that could be used for MS if student has previously completed 120 credits - **blue**

<i>FR fall</i>	<i>cr</i>	<i>title</i>		<i>FR spring</i>	<i>cr</i>	<i>title</i>
WRIT 1301	4	Freshman writing		BIOL 1009	4	Gen. Biol.
AGRO 1660W	2	First year Colloquium		<b>CHEM 1062</b>	<b>3</b>	<b>Chem 2</b>
HORT 1001	4	Plant propagation		<b>CHEM 1066</b>	<b>1</b>	<b>Chem 2 lab</b>
CHEM 1061	3	Chemistry 1		MATH 1142	4	Short Calculus
CHEM 1065	1	Chemistry 1 lab		Historical Perspective with theme CLE	<b>3</b>	<i>(liberal ed)</i>
Elective	1					
	15				15	

<i>SO fall</i>	<i>cr</i>	<i>title</i>		<i>SO spring</i>	<i>cr</i>	<i>title</i>
HORT 1015	4	Woody and Herbacious Plants		FSDY 2101	3	Plant Production Systems
<b>CHEM 2301</b>	<b>3</b>	<b>Org. Chem</b>		STAT 3011	4	Statistics
SOIL 2125	4	Basic Soil Science		Literature with theme CLE	3	<i>(liberal ed)</i>
CFAN 2333	3	Insects, Microbes and Plants		<b>AGRO 3660</b>	<b>3</b>	<b>Plant Gen. Res.</b>
				PLSC 3401	4	Plant genetics
	14				17	

<i>JR fall</i>	<i>cr</i>	<i>title</i>		<i>JR spring</i>	<i>cr</i>	<i>title</i>
BioC 3021	3	Biochemistry		<b>HORT 4071W</b>	<b>4</b>	<b>Plant Biotech</b>
<b>AGRO 5021</b>	<b>3</b>	<b>Plant breeding principles</b>		<b>PLPA 2001</b>	<b>3</b>	<b>Plant pathology</b>
<b>AGRO 5431</b>	<b>3</b>	<b>Bioinformatics</b>		<b>AGRO 3090</b>	<b>1</b>	<b>Directed Studies</b>
Soc. Sci CLE	3	<i>(liberal ed)</i>		PLSC 3005W	4	Plant Physiology
HORT/AGRO 411x	1	Plant Identification		Arts & Humanities with theme CLE	3	<i>(liberal ed)</i>
CFANS Interdisciplinary course	3					
	16				14	

*Students apply by December 5 of junior year for APS program*

<i>SR fall</i>	<i>cr</i>	<i>title</i>		<i>SR spring</i>	<i>cr</i>	<i>title</i>
<b>Stat 5301</b>	<b>3</b>	<b>Stat Methods Quality Imprvmt</b>		<a href="#">AGRO 5121</a>	<b>3</b>	<a href="#">Appl. Exp Design</a>
AGRO 5311	1	Orientation		<a href="#">HORT 5007</a>	<b>3</b>	<a href="#">Adv. Plant Prop</a>
HORT or AGRO 4096W or AGRO 4097W	2	Internship or Undergraduate Thesis		<a href="#">HORT 5058/5059</a>	<b>2/1</b>	<a href="#">Plant Cytogenetics</a>
Elective	9			<a href="#">PLPA 5301</a>	<b>3</b>	<a href="#">Plant Genomics</a>
				Elective	<b>2</b>	Elective
	15				14	

*Students must graduate by end of 4th year with undergrad Plant Science degree*

<i>MS fall</i>	<i>cr</i>	<i>title</i>		<i>MS spring</i>	<i>cr</i>	<i>title</i>
EEB 5042	3	Quant genetics		AGRO 8202	3	Breeding Quant.
AGRO 8201	3	Adv Plant Breeding		ELECTIVE	3	Topics/discussion
PBIO 5601	3	Topics in Plant Biochemistry		PLPA 5660	3	Plant Disease Resistance and Applications
THESIS CREDITS	6			ELECTIVE	2	
Ethics				THESIS CREDITS	4	
	15				15	

*Students must take 30 credits while enrolled in grad program*