

## **Integrated Plant Biology**

### Required for all students in the specialization:

LIFE8XX, Biosystems Research I: Big Questions (3cr)  
LIFE8XX, Biosystems Research II: Integrating discovery approaches into basic and applied research (3cr)  
LIFE8XX, Graduate Seminar (6cr total): Research and journal club presentations  
LIFE8XX, Rotation Research (3cr total)  
LIFE8XX, Professional Skills (1cr)  
STAT 801 (4cr), Statistical methods in research  
Biotechnology Core Facility instrumentation course (2cr)

### **IPB student's core course selection options (minimum of 3 credits per topic area)**

#### Computational/Stats component:

AGRO 840: Bioinformatics Applications in Agriculture (3 credits)  
AGRO/STAT 932: Biometrical genetics and plant breeding (3 credits)  
BIOS 826: Computational Systems Biology (3 credits)  
BIOS 827: Practical Bioinformatics Laboratory (3 credits)  
BIOS 828: Perl Programming for Biological Applications (3 credits)  
BIOS 829: Phylogenetic Biology (4 credits)  
BIOS 877: Bioinformatics and Molecular Evolution (3 credits)  
CSCE 871: Bioinformatics (3 credits)  
CSCE 896: Computational Methods in Bioinformatics (3 credits)  
STAT 801: Statistical Methods for Research (4 credits)  
STAT 802: Experimental Design (4 credits)  
STAT 803: Ecological Statistics (4 credits)  
STAT 842: Computational Biology (3 credits)

#### Organismal/Breeding component:

AGRO/HORT 278: Botany (4 credits)  
AGRO/HORT/NRES 826: Invasive Plants (3 credits)  
AGRO/NRES 842: Wildland Plants (3 credits)  
BIOS 855: Great Plains Flora (4 credits)  
BIOS 871: Plant Systematics (4 credits)  
BIOS 878: Plant Anatomy (4 credits)  
BIOS 879: Plant Growth and Development (4 credits)  
NRES 806: Plant Ecophysiology: Theory and Practice (4 credits)  
AGRO/ASCI 931: Population Genetics (3 credits)  
ENTO 827: Ecological Genetics (3 credits)

#### Genetics/Molecular/Cellular component:

BIOS 818: Advanced Genetics (3 credits)  
AGRO 919: Plant Genetics (3 credits)  
AGRO 810: Plant Molecular Biology (3 credits)  
BIOS 820: Molecular Genetics (3 credits)  
AGRO 807: Plant-Water Relations (3 credits)  
AGRO/BIOC 834: Plant Biochemistry (3 credits)  
AGRO 896: Biofortification (4 credits)  
PLPT 867: Plant Associated Microbes (4 credits)

Environment/Ecology/Evolution component:

BIOS 803 Principles of Evolution (3 credits)

BIOS 805 Principles of Ecology (3 credits)

AGRO/HORT/NRES 806: Plant Ecophysiology: Theory and Practice (4 credits)

AGRO/NRES 807 / BIOS 817: Plant-Water Relations (3 credits)

AGRO/HORT/NRES 808: Microclimate: The Biological Environment (3 credits)

AGRO/HORT 832: Learning Plant Science (3 credits)

AGRO/HORT/NRES 835: Agroecology (3 credits)

AGRO/NRES 840: Great Plains Ecosystem (3 credits)

AGRO 843: Ecology of Invasive Species (3 credits)

AGRO 850 / NRES 852: Climate and Society (3 credits)

AGRO/NRES 877: Great Plains Field Pedology (4 credits)

HORT 812 / NRES 810: Landscape Ecology (3 credits)

BIOS/NRES 854: Ecological Interactions (3 credits)

BIOS 857: Ecosystem Ecology (4 credits)

BIOS 870: Prairie Ecology (4 credits)

NRES 824: Forest Ecology (4 credits)

NRES 868: Wetlands (4 credits)

NRES 867: Global Climate Change (3 credits)

NRES/HORT 817: Agroforestry Systems in Sustainable Agriculture (3 credits)