

**PRINCIPLES OF PLANT BREEDING  
AGRONOMY-HORTICULTURE 501  
SYLLABUS SPRING, 2015**

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| Class | Day | Date | Topic   | Presenter |
|-------|-----|------|---|-----------|
| 1     | W   | 1/21 | Germplasm and variation                                 | IG        |
| 2     | F   | 1/23 | Germplasm and variation                                 | IG        |
| 3     | M   | 1/26 | Plant domestication and crop evolution                  | IG        |
| 4     | W   | 1/28 | Hardy-Weinberg Equilibrium                              | JN        |
| 5     | F   | 1/30 | Coefficient of inbreeding                               | JN        |
| 6     | M   | 2/2  | Process of inbreeding                                   | JN        |
| 7     | W   | 2/4  | Genetic consequences of inbreeding                      | JN        |
| 8     | F   | 2/6  | Genetic consequences of inbreeding                      | JN        |
| 9     | M   | 2/9  | Modes of reproduction and gene dispersal, Part 1        | IG        |
| 10    | W   | 2/11 | Modes of reproduction and gene dispersal, Part 2        | IG        |
| 11    | F   | 2/13 | Incompatibility and Sterility, Part 1                   | IG        |
| 12    | M   | 2/16 | Incompatibility and Sterility, Part 2                   | IG        |
| 13    | W   | 2/18 | <b>Exam 1</b>   |           |
| 14    | F   | 2/20 | The development of modern scientific plant breeding     | IG        |
| 15    | M   | 2/23 | Transmission genetics in the practice of plant breeding | IG        |
| 16    | W   | 2/25 | Transmission genetics in the practice of plant breeding | IG        |
| 17    | F   | 2/27 | Linkage and recombination                               | IG        |
| 18    | M   | 3/2  | Linkage and recombination                               | IG        |
| 19    | W   | 3/4  | Quantitative inheritance                                | JN        |
| 20    | F   | 3/6  | Average effect of allelic substitution                  | JN        |
| 21    | M   | 3/9  | Selection Theory I                                      | JN        |
| 22    | W   | 3/11 | Selection Theory II                                     | JN        |
| 23    | F   | 3/13 | Heritability  | JN        |
| 24    | M   | 3/16 | Heritability  | JN        |
| 25    | W   | 3/18 | Mating Designs  | JN        |
| 26    | F   | 3/20 | <b>Exam II</b>  |           |
| 27    | M   | 3/23 | Polyploidy  | IG        |
| 28    | W   | 3/25 | Polyploidy  | IG        |
| 29    | F   | 3/27 | Intellectual Property Protection in Plant Breeding      | WARF      |
|       | M   | 3/30 | <i>Spring break</i>                                     |           |
|       | W   | 4/1  | <i>Spring break</i>                                     |           |
|       | F   | 4/3  | <i>Spring break</i>                                     |           |
| 30    | M   | 4/6  | GxE interactions  | JN        |
| 31    | W   | 4/8  | GxE interactions  | JN        |
| 32    | F   | 4/10 | Wide area testing                                       | IG        |

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| 33 | M | 4/13 | Backcross breeding procedures              | JN    |
| 34 | W | 4/15 | Backcross                                  | JN    |
| 35 | F | 4/17 | Pedigree selection                         | JN    |
|    |   |      |  |       |
| 36 | M | 4/20 | Derivatives of pedigree selection IBC, SSD | JN    |
| 37 | W | 4/22 | Recurrent Selection                        | JN    |
| 38 | F | 4/24 | Exam III                                   |       |
|    |   |      |  |       |
| 39 | M | 4/27 | Recurrent Selection                        | JN    |
| 40 | W | 4/29 | Heterosis                                  | JN    |
| 41 | F | 5/1  | Heterosis                                  | JN    |
|    |   |      |  |       |
| 42 | M | 5/4  | Breeding for pest resistance               | IG    |
| 43 | W | 5/6  | Discussion of position papers              | IG/JN |
| 44 | F | 5/8  | Discussion of position papers              | IG/JN |
|    |   |      |  |       |
| 45 |   |      | FINAL EXAM                                 |       |

Book on reserve at Steenbock Library for reference

- *Essentials of Plant Breeding, Bernardo*

Additional books suggested for reference

- *Breeding Field Crops, Poehlman and Sleper*
- *Principles of Cultivar Development, Fehr*
- *Principles of Crop Improvement, Simmonds*
- *Principles of Plant Breeding, Allard*
- *Hybrid: History and Science of Plant Breeding, Kingsbury*

A selection of plant breeding-related journals

- *Crop Science*
- *Journal of the American Society for Horticultural Science*
- *Theoretical and Applied Genetics*
- *Euphytica*
- *Plant Breeding*
- *HortScience*

All course material will be posted on the learn@UW site for this course.

The course grade will be determined by three exams worth 20% each and a final exam worth 20%. The remaining 20% comes from a position paper that will be due on April 13<sup>th</sup> in class. Papers turned in later than class time on this date will receive lower letter grades for each day they are late. The position paper is to focus on stating, supporting, and defining a plant breeding position on a topic of your choice. We encourage you to discuss your paper topic with us before you write it. It is critical that the paper be a product of your own scholarship. Sources must be cited appropriately using a common format for all citations. We encourage you to use the format in the journal *Crop Science*. Any verbatim material used should be placed in quotation marks. We consider source information in the grading of the papers. The paper is to be no longer than 10 pages double-spaced, excluding references. Please bring one copy for each instructor in hard copy. Include a 200-word abstract with a title and name on cover page (this does not count in the 10 page total). Participation and attendance are encouraged and in fact most likely necessary for a complete understanding of the course material. If you need to miss class and want information on what you've missed, feel free to contact us via email or make an appointment to meet in person.

