

Computational Genomics
Workshop of Genomic Prediction
Northeast Agricultural University, Harbin, China, December 26-30, 2016

Professor: Zhiwu Zhang (Zhiwu.Zhang@wsu.edu)

Teaching assistants: Jiabo Wang, You Tang, and Zhao Li

Classroom: 成栋楼 233 机房

Lecture: 8:30AM-Noon

Lab: 1:30-5:00 PM

Objective: Develop concepts and analytical skills for modern breeding by using genomic prediction in framework of mixed linear models and Bayesian approaches.

Text Book: There is no required textbook. Each lecture will be accompanied by a handout that covers all of the in class material and more in-depth material that is beyond this course. For students who would like to have a general reference book, I recommend a free book (academia): Genome-Wide Association Studies and Genomic Prediction

<http://link.springer.com/book/10.1007%2F978-1-62703-447-0>

Assessments: Attendance (10%), participation (20%), exam (30%) and Homework (40%).

Grade and Certificate: A (93%-100%); A- (90%-93%); B+ (87%-90%); B (83%-87%) B- (80%-83%); C+ (77%-80%); C (73%-77%); C- (70%-73%) D+ (66%-70%); D (60%-66%); F(0%-60%).

Note: The upper grade will be assigned to a score at a cutting point without rounding. For examples, score of 93.00% receives "A" and score 92.99% receives "A-". Certificate is available only for grade of D and above.

Homework: Due at 8:30 AM on Dec 28 (HW1) and Dec 30 (HW2).

Exam: December 30, 90 minutes (3:30-5:00PM), 50 questions.

Schedule

Lecture	Date	CROPS545*	Title	HW Due
1	12/26/16	1	Syllabus/course overview and introduction	
2	12/26/16	8	Genetic architecture and simulation of phenotype	
3	12/27/16	22	Marker Assisted Selection (MAS)	
4	12/27/16	23	Model fit and cross validation accuracy	
5	12/28/16	24	genomic Best Linear Unbiased Prediction(gBLUP)	HW1
6	12/28/16	25	Ridge regression (rrBLUP)	
7	12/29/16	27	Bayesian theory	
8	12/29/16	28	Bayesian methods	
9	12/30/16	29	Bayesian implementation	HW2
10	12/30/16	30	BLUP alphabet	

*The equivalent lecture number in CROPS545 (Statistical Genomics) at Washington State University. PPT and R code are available at <http://zzlab.net/StaGen>.