

COURSE SYLLABUS FOR APPLIED GENETICS

Instructor: M. Anema

Course Description and Objectives:

This course is designed as an upper level, advanced course in the practice and application of basic concepts of genetics and heredity in livestock production. Students will review relevant topics such as meiosis and understanding chromosomes, Mendelian genetics, principles of phenotypic expression, population genetics, gene frequencies, and principles of selection (qualitative and quantitative genetics). Additionally, students will have the opportunity to apply the information from lecture to practice sets of problems representative of animal/livestock production scenarios.

Class Structure:

The course is worth 0.5 elective credits and is designed as a semester long class that meets four times weekly (MTWR; 55 minute instructional periods). The class will consist primarily of lecture format, discussions and practical applications. Projects will also be assigned to help reinforce the material presented in lecture. Some projects will require students to give oral presentations. Students will be expected to work both on their own and in groups for various assignments. Students are also expected to develop/use good methods of taking notes from class lectures and should expect to take notes daily. Class notes will serve as the primary source for reference and study material for exams. Students are encouraged to keep their notes, handouts, and class work organized in a three-ring binder. Students are also expected to compile and keep a subject dictionary of vocabulary terms presented in class.

****Prerequisites:** Equine Science 1, Animal Production Systems 1, Biology, consent of instructor

Class Expectations:

Participation: Success is 90% attitude, 10% aptitude. Students are expected to arrive at class on time, prepared and willing to participate. A sincere, honest effort is the best way to assure success. **Students are expected to ask questions whenever anything is unclear or need help in understanding a concept.**

Attendance: Regular attendance is CRITICAL for successful completion of this class. Students are expected to attend EVERY class. Students are expected to arrive at class ON TIME. Students having more than **10** absences in a class that meets daily may be dropped from the class, and/or are likely to receive a failing grade. Special consideration will be given to absences resulting from extended illness and will require parental and/or medical notification. In extenuating circumstances, a final determination of the grade will be made at the discretion of the teacher and administration. **Come to class and be ready to learn.**

Adherence to AAEC Policy: Students are expected to know and follow AAEC and PVCC rules concerning appropriate dress and conduct. No hats or sunglasses will be worn during class. Students not complying with dress code will not be allowed to attend class, and will take an unexcused absence. Cell phones are to be turned OFF, kept in backpacks or purses, and may be confiscated if they disrupt class. Confiscated cell phones can only be retrieved by a parent from the office. No drink, food, or gum allowed in the classroom except for bottled water.

Respect: This class is an elective, and it is a privilege to attend. Students are expected to demonstrate respect to the learning environment, their instructor, themselves and other students. This respect includes courtesy, compliance, tolerance, and professionalism.

Recognize the good in yourself
Every person is special and has something to offer
Show consideration for those around you
Provide support and encouragement to your peers
Earn respect by showing respect
Cooperate with your peers and your teacher
Together, we can all make a difference!

Homework/Assignments/Exams:

Concept worksheets, projects, and quizzes will be assigned throughout the semester for each unit. **Students need to strive to produce quality homework that is neat, legible and grammatically correct.** Late assignments will **NOT** receive a grade, but are required to be completed and turned in for the student to be eligible for extra credit. Class notes will serve as the primary reference and study material for exams. **It is the student's responsibility to make sure he/she has all the notes prior to exams.** It is extremely important to get missed notes (from peers), and assignments (from the teacher) *immediately* upon returning to class after an absence. Reviews for the exams will also be provided. Students are encouraged to **regularly** review their class notes and vocabulary terms to stay current with class material and discussions. Students will also need to keep a separate binder section or notebook set aside for a personal dictionary. The dictionary will be comprised of context vocabulary terms and definitions presented daily in class. Students are *strongly* encouraged to have AND use a calendar/day planner.

*Students who are absent when an assignment is given will be given an adjusted due date and the same amount of time to complete the assignment as students receiving the assignment on the original day.

**Students scheduled to be absent on an exam day for an excused activity need to make arrangements prior to their absence to take the exam within a week's time of the original exam date. If no arrangements are made, students will take the exam the next class period they attend. Reviews are provided a week prior to exams and students absent the day before an exam are still expected to take the exam on the original exam date.

**Students who fail to maintain a "C" or better grade in the class, or who are missing work will be expected to seek extra help and conference with the teacher. Supplemental help/time can be arranged after school for students who need extra instruction or make-up time to finish missing/late assignments.

Extra Credit:

Extra credit assignments and projects assigned and/or approved by the teacher are for EXTRA CREDIT! That means that **extra credit work will be applied to the student's grade ONLY AFTER the regularly assigned homework is completed and submitted.** Extra credit WILL NOT be substituted for regularly assigned homework, and will be limited to 50 possible points. Extra credit activities are best used to help reinforce lecture material, study for exams and boost scores a few percentage points - not for raising a grade that is significantly failing to passing.

Grading:

Grades will be determined by the quality of work on worksheets, projects, participation, personal dictionaries, and unit concept quizzes. Percentage grades will be calculated on POINTS EARNED versus POINTS POSSIBLE (points earned divided by points possible). Students and parents can access class grades throughout the semester on the Genesis online program.

Standard grading scale:	90-100%	A	80-89%	B
	70-79%	C	69-0%	F

REMEMBER...no D's will be awarded. Students must earn a 70% or better to pass the class.

Participation points will be awarded for class activities assigned and completed in class, or for planner use on a **random** basis. IT IS IMPORTANT TO NOT MISS CLASS AND TO BE PREPARED!

Instructor contact information: manema@aaechighschools.com; 602-569-1101 (AAEC-PV office)

Students and parents are encouraged to contact the instructor by email or phone if they have questions regarding class policies, assignments, tutoring or grades.

***Instructor's disclaimer: The instructor reserves the right to change the class and grading policy as needed. Any changes will be in the students' best interests and announced when changed.*

COURSE TOPICS FOR APPLIED GENETICS

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- Unit 1: The Importance of Genetics in Agriculture
- The Importance of Genetics in Agriculture
 - Principles of Genetic Improvement

- Unit 2: Review of Chromosomes and Cellular Division
- Understanding Chromosomes
 - Chromosomal Abnormalities
 - Mitosis and Meiosis
 - Gene Segregation in Meiosis

TEST

- Unit 3: Principles of Mendelian Genetics
- Mendel's Experimental Design
 - Mendel's Laws of Segregation

TEST

- Unit 4: Phenotypic Expression
- Nonadditive Gene Expression
 - Additive Gene Expression

TEST

- Unit 5: Principles of Selection
- Quantitative Genetics
 - Heritability

TEST

- Unit 6: Population Genetics
- Gene Frequencies
 - Hardy-Weinberg Law
 - Genetic Variations in Natural Populations

TEST

FINAL

Syllabus Receipt

Date: _____

Student Name: (print) _____

Class: Applied Genetics _____

Semester: _____

I have read a copy of the course syllabus for this class. Along with the instructor's discussion of the contents of the syllabus, **I understand the class objectives, procedures, and what is expected of me to earn credit and a specific grade for this class.** I have reviewed this syllabus with my parent(s).

Student signature: _____ Date: _____

Student email: _____

Parent signature: _____ Date: _____

Parent phone: _____

Parent email: _____

Parent contact preference: _____ phone _____ email