

Animal Science 4711: Breeder Flock & Hatchery Management Summer 2026

Lecture: Monday - Friday: 8:00 – 12:00 pm; 1:00-5:00 pm, HH 365

Laboratory: Monday - Friday: 1:00-5:00 pm, Veterinary Teaching Barn; HH 365

Course Description: History of artificial incubation relevant to the U.S. hatching industry. Practices involved in successful incubation of hatching eggs and embryonic development in birds. Management factors involved in breeder hen production and operating a hatchery.

Student Outcomes: At the completion of this course, students should be able to:

1. Identify normal incubation requirements and problems associated with improper conditions.
2. Evaluate biosecurity plans and measures of microbial cleanliness of hatcheries.
3. Identify current management systems for poultry breeding flocks and understand differences among different species.
4. Apply knowledge of incubation and breeder management systems to analyze industry situations.

Grading: Your final grade for this course is calculated from a total of 400 points:

Exam 1:	150 points
Exam 2:	150 points
Topical Paper Discussion:	40 points
Problem Set:	40 points
Participation:	20 points

Final grades are assigned as follows:

A	372-400 points
A-	349-371 points
B+	336-348 points
B	322-335 points
B-	310-321 points
C+	298-309 points
C	286-297 points
C-	274-285 points
D+	262-273 points
D	250-261 points
D-	239-249 points
F	238 points or less
D-	239-249 points
F	238 points or less

Expectations: Class participation is an important aspect of active learning and is directly beneficial to the student and their peers. The best way to get the most out of this class is participation, asking questions, and networking with your peers and guest speakers. The poultry industry is small and offers many job opportunities. As Poultry Science Departments and classes are disappearing across the country, this class is an excellent way to get your foot in the door to discover an interest you didn't know you had, or also help you find what you do not want to do for a career. When Canvas or any online/ email option is used to submit class work, it is the sole responsibility of the student to ensure documents are submitted on time and in a readable format. Any malfunction is the responsibility of the student and students must clearly communicate that the final form has been submitted when submitting over email.

Biosecurity

There should be absolutely no contact with poultry, swine, or any avian species for a minimum of 72 hours prior to farm visits. Students with pet birds need to make arrangements for the duration of the rotation. Students who fail to follow biosecurity protocols will be requested to be excused from participating in laboratory activities.

Cell Phone policy

It is expected of students not to utilize their cell phones during class or lab work, unless during a break period. Cell phone use is extremely distracting not only for the instructor but other classmates as well. COE is taking a strong stance on cell phone usage. If a student is found to be using a cellphone during class, the student will be given a verbal warning by the instructor. If the student is found to be using a cellphone for a second time, the COE administrative team will be informed and action will be taken. If you have a pre-determined call that you need to make or answer, please alert the instructor ahead of time.

Scholastic Dishonesty

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct

Code: http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf) If it is determined that a student has cheated, the student may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see:

<http://policy.umn.edu/education/instructorresp>. The Office for Community Standards has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: <https://communitystandards.umn.edu/avoid-violations/avoiding-scholastic-dishonesty>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

Disability Accommodation

The University of Minnesota views disability as an important aspect of diversity, and is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center (DRC) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

- If you have, or think you have, a disability in any area such as, mental health, attention, learning, chronic health, sensory, or physical, please contact the DRC office on your campus (UM Twin Cities - [612.626.1333](tel:612.626.1333)) to arrange a confidential discussion regarding equitable access and reasonable accommodations.
- Students with short-term disabilities, such as a broken arm, **can** often work with instructors to **minimize** classroom barriers. In situations where additional assistance is needed, students should contact the DRC as noted above.
- If you are registered with the DRC and have a disability accommodation letter dated for this semester or this year, please contact your instructor early in the semester to review how the accommodations will be applied in the course.

- If you are registered with the DRC and have questions or concerns about your accommodations please contact your (access consultant/disability specialist).
- Additional information is available on the DRC websiteUM Twin Cities - <https://diversity.umn.edu/disability/>) or e-mail (UM Twin Cities - drc@umn.edu) with questions.

Sexual Harassment

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy:

https://regents.umn.edu/sites/regents.umn.edu/files/policies/Sexual_Harassment_Sexual_Assault_Stalking_Relationship_Violence.pdf

Equity, Diversity, Equal Opportunity, and Affirmative Action

The University provides equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf.

Mental Health and Stress Management

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <http://www.mentalhealth.umn.edu>.

Academic Freedom and Responsibility: *for courses that do not involve students in research*

- Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. *
- Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost. *[Customize with names and contact information as appropriate for the course/college/campus.]*
- *Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".*

Unforeseen Circumstances and Adaptation of the Syllabus

Note: Information in the syllabus is subject to change. Changes will be announced in class and posted on the course site on Canvas and/or emailed to students.

Monday, June 15

Monday

8:30 - 9 am	Course introduction, introduce problem sets,	Kean
9 – 9:30	Introduction to poultry production systems	Kean
9:30 – 10:30	Feed restriction concepts in breeding poultry	Kean
10:30-11:30	Lighting program concepts for breeding poultry	Kean
1 – 2:30	Turkey breeder rearing and flock management	Kean
2:30 - 3:30	Turkey breeder flock management	Kean
3:30-4:30	Bird behavior & relation to management	Kean

Tuesday

8:30 - 10	Broiler breeder rearing and flock management	Kean
10 -11:30	Organization, genetic flow in the poultry industry, breeder selection strategies	Kean
1-2:30	AI and behavior monitoring Lab	Boukherroub /Kean
2:30-4	Environmental monitoring Lab	Boukherroub /Kean

Wednesday

8:30-9:30	Broodiness and broodiness control	Boukherroub
9:30-10:30	Introduction to artificial insemination	Boukherroub
10:30-11:30	Semen Evaluation Lab	Boukherroub
1 - 2	Gait Scoring / Footpad Scoring	Kean
2 – 4	Embryonic Sexing	Kean

Thursday

8:30 – 11:30	Layer Breeder Management	(TBD)
1 – 3	Brief history of artificial incubation and hatching	Kean
	Hatchery layout, scheduling, recordkeeping	Kean
	Contract production	Kean
3-4	Incubation of other species	Kean

Monday		
8:30 – 9:30	Exam 1	
10 am	Respiration of the embryo	Held
	Conductance of eggshells	Held
	Embryology	Held
	Egg Storage (and SPIDES)	
	Pre-incubation handling of hatching eggs	Held
Tuesday		
	Field Trip – Hatchery Tour	TBD
Wednesday		
8:30 - 11	Physiological requirements for incubation	Held
	<i>In ovo</i> vaccination	Held
	Thermoregulation	Held
	How to conduct a breakout	Held
11-12	Post-hatch chick quality	Held
1-4:30	Embryology Lab	Held
	Chick quality lab	Held
	Hatch Residue Breakout Lab	Held
Thursday		
8:30 – 10:30	Microbes in the hatchery	Dashek
	Cleaning and disinfection,	Dashek
	Microbiological monitoring	Dashek
10:30 – 11:30	Hydrogen Peroxide and formaldehyde in hatcheries	Dashek
1-2	Environmental considerations for breeders	Dashek
2-3	NPIP and breeder farm biosecurity	Dashek
Friday		
8:30 – 9:30	EXAM 2	
10 – noon	Student reports, evaluations	Boukherroub /(Kean – Zoom)