# ANSC*4350 Experiments in Animal Biology

Winter 2019
Section(s): C01

Department of Animal Biosciences
Credit Weight: 0.50
Version 1.00 - January 03, 2019

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# 1 Course Details

## 1.1 Calendar Description

This course provides an opportunity for directed hands-on projects involving live animals and laboratory techniques. A set of selected projects will be provided by Animal Biosciencs faculty within their broad fields of study, for example animal behaviour and welfare, environmental physiology, endocrinology, and reproduction.

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|---|---|
| **Pre-Requisite(s):** | ANSC*3080, ANSC*4090 |
| **Co-Requisite(s):** | ANSC*4100, ANSC*4490 |
| **Restriction(s):** | Restricted to students in BSCH.ABIO, BSAG.ANSC. Instructor consent required. |

## 1.2 Course Description

Over the course of the semester, groups of students will be involved in conducting a single experiment on agricultural animals either on campus or at one of the research stations. Students will be provided with an outline for the experiment but will develop their own hypotheses and experimental plan and execute data collection. Individual groups conducting separate projects will meet separately for the development of hypotheses, experimental design, data collection and analysis. Students will be responsible for measuring behaviour, monitoring growth, production or reproduction and collecting blood or saliva. Students will learn and practice sampling techniques and assays for measuring hormones or metabolites. They will also analyze data and interpret and present their results in written and oral format.

Students will meet weekly (Tuesday at 2:30 p.m., ANNU Room 030) for presentations on techniques used in different areas of research and to present group status reports. This will expose students to the variety of experimental approaches used in various fields of research. Students will be expected to integrate or consider the impact of these ideas in their

experimental design.

## 1.3 Timetable

Tuesday 2:30 p.m. - 5:30 p.m., ANNU 030, other times as required

Timetable is subject to change. Please see WebAdvisor for the latest information.

## 1.4 Final Exam

There is no final exam. The different groups will present their results during the final class (April 2) and individual lab reports are due the end on the final week (April 5)

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# 2 Instructional Support

## 2.1 Instructional Support Team

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| **Instructor:** | James Squires |
| **Email:** | jsquires@uoguelph.ca |
| **Telephone:** | +1-519-824-4120 x53928 |
| **Office:** | ANNU 146 |
| **Office Hours:** | By Appointment |
| **Lab Co-ordinator:** | Julie Kim |
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| **Telephone:** | +1-519-824-4120 x56477 |
| **Office:** | ANNU 254 |
| **Office Hours:** | By Appointment |

## 2.2 Teaching Assistant(s)

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|---|---|
| **Teaching Assistant:** | Mariana Roedel |
| **Email:** | mroedell@uoguelph.ca |
| **Telephone:** | Ext 53557 |
| **Office Hours:** | By Appointment |

**Teaching Assistant:** Christine Bone
**Email:** cbone@uoguelph.ca
**Office Hours:** By Appointment

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# 3 Learning Resources

## 3.1 Required Resource(s)

**Required Texts (Textbook)**
None

## 3.2 Recommended Resource(s)

**Recommended Texts (Textbook)**
None

## 3.3 Additional Resource(s)

**Lab Manual (Lab Manual)**
None

**Other Resources (Other)**
Lecture notes and additional information pertinent to the course are posted on CourseLink

## 3.4 Additional Course Information

### Project 1 – Piglet feed management during the post-weaning period

**Background**

Piglets experience a post-weaning growth lag that is related to poor feed intake, limited gut capacity, exposure to novel pathogens, introduction of feed allergens (e.g. soybean meal), and social stressors (i.e. establishment of a new social hierarchy). To combat this post-weaning growth lag, nutritionists and producers often feed very expensive and highly digestible diets to promote feed consumption.

It is common for nursery piglets to be fed multiple phases of diets with decreasing nutrient density and digestibility. Based on mathematical models, we estimate the optimum body weight to conduct feed switches. However, the piglet itself may be more effective at eating to its nutrient requirements given the choice between high and low nutrient density diets.

Additionally, when piglets are mixed into new social groups (i.e. litter mates are often separated) piglets are preoccupied with establishing new social hierarchies in the first several hours after weaning. During this time, piglets often do not explore the feeders or consume any feed. Adding feeders and feed after the initial social hierarchy is established may promote increased exploratory behaviour and an overall greater feed intake within the first 24 hours of weaning.

## Objectives and overview

The objectives of this project are to determine the effects of various feed management strategies after weaning on feed intake, piglet growth, and feeding and social behaviour. Sixty four piglets will be obtained at the Arkell Swine research station on the day of weaning and randomly assigned to 1 of 8 identical nursery pens (ensuring that equal numbers of littermates are present in each pen). One of many different feed management strategies can be studied. For example:

1. Timing of feed introduction - In half of the pens feeders will be pre-filled with nursery diet (standard practice; control group). In the remaining pens feeders and feed will not be provided until 4-6 hours after mixing (treatment group). Behaviour will be monitored immediately after mixing and 4-6 hours later (when feeders are added to treatment pens). Collect saliva samples for cortisol analysis by RIA throughout the day (ideally morning/afternoon/evening). Monitor per pen daily feed intake and individual piglet body weights.

2. Feed selection by piglets post weaning - In half of the pens 2 feeders will be provided, one with a high and one with a low nutrient density feed (treatment). In the remaining pens, two feeders will be provided with a standard ration (control; nutrient composition is the average of the treatment diets). Monitor feeding behaviour using recording equipment to develop ethograms and behaviour time budgets, piglet growth rates, and feed disappearance from each of the feeders. Collect saliva samples for cortisol analysis.

## References:

Bruni A, Quinton VA, Widowski TM. 2007. The effect of feed restriction on belly nosing behaviour in weaned piglets. Appl. Anim. Behav. Sci. 110:203-215.

Colson V, Martin E, Orgeur P, Prunier A. 2012. Influence of housing and social changes on

growth, behaviour and cortisol in piglets at weaning. Physiol. Behav. 107:59-64.

Dybkjaer L, Jacobsen AP, Togersen FA, Poulsen HD. 2006. Eating and drinking activity of newly weaned piglets: Effects of individual characteristics, social mixing, and addition of extra zinc to the feed. J. Anim. Sci. 84: 701-711.

Ettle T, Roth FX. 2005. Dietary preferences for feeds varying in threonine concentration by the piglet. Physiol. Behav. 85:289-295.

Ferguson NS, Nelson L, Gous RM. 1999. Diet selection in pigs: choices made by growing pigs when given foods differing in nutrient density. Anim. Sci. 68: 691-699.

Pluske JR. 2013. Feed- and feed additives-related aspects of gut health and development in weanling pigs. J. Anim. Sci. Biotech. 4:1-7. (Review paper)

Widowski TM, Torrey S, Bench CJ, Gonyou HW. 2008. Development of ingestive behaviour and the relationship to belly nosing in early-weaned pigs. Appl. Anim. Behav. Sci. 110:109-1027.

## 3.4 Additional Course Information

### Laboratory Project 2. Examining the role of genetics in broiler breeder welfare and productivity

**Background**

The meat poultry industry is facing concerns about sustainability and animal welfare at the same time as productivity increases to satisfy the growing global demand for chicken meat. Selection for fast-growing meat chicken (broilers) has resulted in poor reproductive performance in their parent stock (broiler breeders). Therefore, conventional broiler breeders are chronically feed-restricted to avoid the negative consequences of obesity under *ad*

*libitum* feeding. Chronic feed restriction of broiler breeders is a welfare concern because conventional broiler breeders showed signs of hunger, lack of satiety and frustration. Some of these behaviours include feather and severe pecking, and over drinking, resulting in poor feather coverage and high-water usage and litter moisture. Alternative strains of broiler breeders (e.g. slow growing) are unlikely to require such a high feed restriction level, and guidelines of these lines suggest higher feed efficiency and reproductive performance. Yet, little information is known about the performance and welfare of slower growing broiler breeders.

## Objectives and overview

The objective of this project is to compare the behaviour, welfare and production of three strains of broiler breeder chickens. This experiment will be part of on-going study at Arkell poultry research station (AUP# 3746). Three strains of female broiler breeders differing in growth rates will be newly housed with broiler breeder roosters around the middle to end of January. They are all housed in one room, in 12 different pens (4 pens per female strain). Each pen houses 25 females and 3 males. They will be 22 weeks old on January 28, 2019.

There are a couple of different approaches that your group can use to address this topic. For example, you can:

- Compare the egg production and fertility between the different strains. Measure reproductive hormones (eg. Estrogen) In blood.

- Compare the time to feed clean up, feeding motivation, water usage and litter condition between the strains

- Compare the stereotypic behaviour (feather pecking, object pecking, over drinking) between the strains

## References:

D'Eath R.B., Tolkamp B.J., Kyriazakis I. and Lawrence A.B., 2009. 'Freedom from hunger' and

preventing obesity: the animal welfare implications of reducing food quantity or quality. *Animal Behaviour* 77:275-288.

Decuypere, E., Bruggeman, V., Everaert, N., Li, Y., Boonen, R., De Tavernier, J., Janssens, S. and Buys, N., 2010. The Broiler Breeder Paradox: ethical, genetic and physiological perspectives, and suggestions for solutions. *British poultry science*, *51*(5), pp.569-579.

De Los Mozos, J., A. García-Ruiz, L. den Hartog, and M. Villamide. 2017. Growth curve and diet density affect eating motivation, behaviour, and body composition of broiler breeders during rearing. *Poultry Science* 96:2708-2717.

Dou, T.C., S.R. Shi, H.J. Sun and K.H. Wang. 2009. Growth rate, carcass traits and meat quality of slow-growing chicken grown according to three raising systems. *Animal Science Papers and Reports* 27 (4): 361-369.

Heck, A., O. Onagbesan, K. Tona, S. Metayer, J. Putterflam, Y. Jego, J. Trevidy, E. Decuypere, J. Williams, and M. Picard. 2004. Effects of ad libitum feeding on performance of different strains of broiler breeders. *British Poultry Science* 45:695-703.

Hocking, P.M., Maxwell, M.H. and Mitchell, M.A., 1993. Welfare assessment of broiler breeder and layer females subjected to food restriction and limited access to water during rearing. *British Poultry Science*, *34*(3), pp.443-458.

Savory, C., K. Maros, and S. Rutter. 1993. Assessment of hunger in growing broiler breeders in relation to a commercial restricted feeding programme. Animal Welfare 2:131-152.

## 3.4 Additional Course Content

## Laboratory Projects 3 and 4.

## The Behaviour and Physiology of Sows and Piglets in Different Farrowing Environments

### Background

Neonatal mortality accounts for significant losses to the swine industry and crushing by the sow is most often the cause of these losses during the first week postpartum. Farrowing crates were developed to prevent crushing; they restrict the sows' movements, which deter the sows from rolling over on the piglets. Because piglets require a much higher temperature than sows, supplemental heat is used in the farrowing environment to provide piglets with a comfortable thermal environment. The supplemental heat source may be located some distance from the sow's udder, which attracts piglets away from the sow and may also reduce crushing.

On the day before farrowing sows are highly motivated to engage in nest-building behaviour. Farrowing crates are criticized on animal welfare grounds because they prevent nest-building behaviour and may increase stress in the sow. Their design may also impair the sow's ability to perform the movement required for normal postural adjustments (i.e. changing from lying to standing and vice-versa) and the resulting stress can impair lactation. Alternative farrowing systems furnished with straw provide more space to the sow and allow sows to perform nestbuilding, but they can also affect piglet thermoregulatory and suckling behaviour. There is some evidence that performing behaviours associated with nesting is more important than the availability of nesting material. Therefore, small modifications to the crate (ie. the addition of cloth tassels) may improve sow welfare while the piglets are still protected through the crate structure. Enriched farrowing environments have also been shown to affect behaviour of piglets.

### Objectives and overview

The objectives of this experiment are to examine the effects of farrowing accommodation, environmental enrichment, and/or sow feed management on the behaviour and physiology of sows and their piglets. One group will focus on sow behaviour and physiology, the other group will focus on piglets. Groups will share access to twelve sows beginning several days before farrowing. Six of the sows will be kept in standard farrowing crates; six will be kept in

adjusted farrowing crates that provide the sow with more room, and supplied with enrichments. The behaviour of sows and piglets can be measured using live observation and video recordings. Routine management practices such as teeth clipping and castration will be done by animal care staff, and piglets' behavioural and physiological responses to these practices can be compared in the different housing systems. Behavior can be analyzed from recordings using ethograms and behaviour time budgets. Body weights, growth rates and mortality of piglets can be measured. Endocrine changes associated with parturition and onset of lactation or stress response can be analyzed from saliva or blood samples collected from the sows using a cortisol RIA. Measures of immune response can be made in the sows or piglets either from the sow's colostrum or from blood samples analyzed by an IL-1β immunoassay.

There are a couple of different approaches that groups can use to address this topic. For example you can:

- Compare nest-building behaviour (sows supplied with enrichments vs no enrichments), stress response and immune status of sows and/or gilts in the two farrowing environments
- Assess the effect of farrowing environment (standard farrowing crate vs size adjusted) on thermoregulatory behaviour, suckling behaviour, growth rates and immune response of piglets
- Compare the standing and lying behaviour of sows and/or gilts in the two farrowing environments (standard farrowing crate vs size adjusted) in relation to risk of crushing piglets
- Compare post-partum sow feed intake in different farrowing environments and using different feeding strategies (e.g. stepwise increases in feed allowance versus ad libitum feeding from day 1 after farrowing), sow eating behaviour, behaviour time budgets, piglet behaviour and growth
- Compare the immune, stress and behavioural responses of piglets to teeth clipping, tail docking or castration in the different housing systems

## References:

Cronin, G.M. and J.A. Smith, 1992. Suckling behaviour of sows in farrowing crates and straw-bedded pens. Appl. Anim. Behav. Sci. 33:175-189.

Cronin, G.M., J.A. Smith, F.M. Hodge and P.H. Hemsworth, 1994. The behavior of primiparous sows around farrowing in response to restraint and straw bedding. Appl. Anim. Behav. Sci. 39: 269-280.

Hrupka, B.J. et al., 1998. The effect of farrowing crate heat lamp location on sow and pig patterns of lying and pig survival. J. Anim. Sci. 76:2995-3002.

Jarvis, S., Calvert, D.M. Weary, E.A Pajor, D. Fraser and A.M. Honkanen 1996. Sow body movements that crush piglets: a comparison between two types of farrowing accommodation. Appl. Anim. Behav. Sci. 49: 149-158.

Jarvis, S., D'Eath, R. B., Robson, S. K., and A.B, Lawrence. 2006. The effect of confinement during lactation on the hypothalamic-pituitary-adrenal axis and behaviour of primiparous sows. Physiol. & Behav. 87, 345-352.

McGlone, J.J., T.M., Widowski, K.D., Stricklen, D. Mitchell, S.E., Curtis. 1996. Sow access to tassel pre-farrowing: preliminary evidence of stillbirth rate. J. Anim. Sci. 74 (1), 127, Suppl.

Sulabo, R. C., J. Y., Jacela, M. D., Tokach, S. S., Dritz, R. D., Goodbrand, J. M., DeRouchey, and J. L., Nelssen. 2010. Effects of lactation feed intake and creep feeding on sow and piglet performance. J. Anim. Sci. 88: 3145-3153.

von Borell, et al. 2009. Animal welfare implications of surgical castration and its alternatives in pigs. Animal 3:1488-1496.

Vanheukelom, V., B. Driessen and R. Geers, 2012. The effects of environmental enrichment on the behaviour of sucklings piglets and lactating sows: A review. Livestock Science 143:116-131.

Widowski, T,M., S.E., Curtis. 1990. The influence of straw, cloth tassel or both on the pre-partum behavior of sows. Appl. Anim. Behav. Sci, 27, 53-71.

## 3.4 Additional Course Content

### Laboratory Project 5.

### Perinatal nutrition of omega-3 fatty acids and limestone particle size on skeletal, behavioral and physiological development in pullets prior to and during sexual maturity and subsequent effects on laying hen productivity, bone health and welfare

**Background:**

Significant improvements in genetic selection over the past fifty years have resulted in commercial laying hens that achieve early sexual maturity, long-lasting peak egg production and extended egg-laying persistency. However, these high levels of production have come at a cost. Greater egg production increases internal demands for calcium (for shell formation), in turn weakening the skeleton, and rendering it prone to osteoporosis and greater risks for bone fractures. Both within Canada and world-wide, there is increasing consumer preference for poultry products that confer “higher animal welfare” and that are perceived to be safer and healthier for people. In this context, management of laying hens has shifted to promote non-cage housing systems that are known to improve musculoskeletal development through exercise. However, these systems also greatly increase risks of collisions, leading to fractures and higher mortality. Thus, solutions are needed to reconcile the disconnect between the requirement for high egg production and the drive to promote animal welfare through enriched and enhanced environment. In other words, for a profitable and sustainable egg industry, the contemporary barriers to increased productivity associated with bird health, nutrition and welfare need to be actively addressed and removed through targeted and relevant research. Two independent experiments involving four graduate students are investigating the impact of perinatal nutrition (omega-3 fatty acids known to influence many biology systems and limestone particle size) on skeletal, behavioral and physiological development in pullets prior to and during sexual maturity. The pullets are followed to laying house to measure egg production, egg quality, aspects of bone health and behavior (behavior aspects under direction of Dr. Tina Widowski)

**Specific objectives and experiment details**

1. Experiment 1: Effects of perinatal and rearing feeding of ω-3 fatty acids on skeletal and immune systems of laying hens of two genetic lines (brown and white strains)
    a. Graduate students: Reza-Nutrition; Rosemary-Behavior)
    b. AUP#3675; birds will be starting to Lay in Feb 2018; the birds are housed in conventional cages, 6 birds per cage in Arkell.
    c. **Brief experimental design:** The experiment is testing two factors 1) 2 genetic background (brown and white strain of birds) and 7 dietary treatments (control, plus diets treated with Omega 3 fatty acids sources); thus, in total there are 14 treatments.
2. Experiment 2. Effects of limestone particle size during rearing and subsequent effects on laying hen productivity, bone health and welfare
    a. Graduate students: Tanka-Nutrition; Madeleine-Behavior)
    b. AUP#3634; birds will 24 weeks in Feb 2018; the birds will be housed in enriched cages in Arkell.
    c. **Brief experimental design:** The experiment is testing two factors: 1) 2 rearing house (conventional cages and aviary) and 3 limestone particle sizes (fine, medium and mixture); thus, in total there are 6 treatments.

## Potential data for ANSC*4350

1. Egg quality (egg shell thickness, breaking strength, yolk: albumen ratio etc) **during non-research data collection days.** Please note daily egg production per pen must be recorded for research purposes.
2. Some behavioral observations
3. Endocrine measurements: estrogen, plasma samples
4. Measurements of immune function

## References

Akbari Moghaddam Kakhki, R., T. Heuthorst, A. Mills, M. Neijat and E. Kiarie. 2018. Interactive effects of calcium and top-dressed 25-hydroxy vitamin D3 on egg production, egg shell quality and medullary bones attributes in aged Lohmann LSL-lite layers. Poult. Doi: 10.3382/ps/pey446

Aigueperse, N., L. Calandreau, and A. Bertin. 2013. Maternal diet influences offspring feeding behavior and fearfulness in the precocial chicken. PLoS One 8: e77583.

Ao, T. et al. 2015. Effects of supplementing microalgae in laying hen diets on productive performance, fatty-acid profile, and oxidative stability of eggs. J Appl Poultry Res 24: 394-400.

Casey-Trott, T. 2016. Opportunities for exercise during pullet rearing: effects on bone health and keel bone damage in laying hens, University of Guelph, Guelph.

Delezie, E., A. Koppenol, J. Buyse, and N. Everaert. 2016. Can breeder reproductive status, performance and egg quality be enhanced by supplementation and transition of n-3 fatty acids? J Anim Physiol Anim Nutr (Berl) 100: 707-714.

Leeson, S., J. D. Summers. 2005. Commercial poultry nutrition. 5 ed. University Books, Guelph, ON, Canada.

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# 4 Learning Outcomes

## 4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Specific Learning Outcomes:

   The goal of this course is to introduce you to the world of independent research.

   By the end of the course, you will:

   1. be familiar with issues of animal care and safety in the laboratory
   2. be familiar with the development of hypotheses and the design of experiments

3. be exposed to laboratory techniques used in different areas of animal biology research
4. develop skills for observing and measuring animals' responses to the physical social or nutritional environment
5. develop skills to measure the animal’s endocrine responses to environmental changes
6. be able to organize your group time to perform experiments, collect and analyse data
7. critically evaluate and interpret your results to integrate various measures of response in order to deepen understanding of biological function
8. write a scientific paper and present your results to the class

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# 5 Teaching and Learning Activities

## 5.1 Lecture

**Topic(s):**

**PLEASE NOTE THIS SCHEDULE IS BY WEEK- CLASS IS ALWAYS ON THE TUESDAY BUT YOU MUST SCHEDULE ADDITIONAL TIME TO COMPLETE LAB WORK.**

| Week of | Lecture | Lab Work |
|---|---|---|
| Jan. 7 | Introduction | Organize groups, choose topic and discuss/plan the literature review |

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|---|---|---|
| Jan. 14 | Behaviour data collection techniques | Develop hypotheses and work schedule |
| Jan. 21 | Presentation of research protocols | Set up experiments |
| Jan. 28 | Animal Care (Dr. Anna Bolinder)<br>Farm and Lab Safety (Christi Cooper, EHS) | Data and sample collection |
| Feb. 4 | | Data and sample collection |
| Feb. 11 | Groups present status reports | Data and sample collection |
| **Feb. 18** | **Winter break** | **Winter break** |
| Feb. 26 | Hormone assay validation | Validation study<br>Data and sample collection |
| Mar. 4 | Groups present status reports | Hormone assays |
| Mar. 11 | | Hormone assays completed |

| | | |
|---|---|---|
| Mar. 18 | Discussion of data analysis and report preparation | Data analysis |
| Mar. 25 | Draft report for comments | |
| Apr. 1 | Lab report due and presentation of projects | |

## 5.2 Lab

**Topic(s):**

The class will be divided into groups, with each group conducting a different project at either Arkell Poultry or Arkell Swine Research Stations. Students will focus on measuring performance, behaviour and endocrine changes in the animals.

The potential projects are:

Project 1. Piglet feed management during the post-weaning period

Project 2. Examining the role of genetics in broiler breeder welfare and productivity

Projects 3 and 4. The Behaviour and Physiology of Sows and Piglets in Different Farrowing Environments

Project 5. Perinatal nutrition of omega-3 fatty acids and limestone particle size on skeletal, behavioral and physiological development in pullets prior to and during sexual maturity and subsequent effects on laying hen productivity, bone health and welfare

Each group of students will conduct one experiment

and individuals within each group will receive training and be assigned responsibility for animal handling, sample collection and hormone analysis. Sample and data collection and analytical procedures will be conducted both during and outside of scheduled lab time as arranged by the groups. Each group member is expected to do their fair share of the work and to participate in group meetings. Evaluations of all individual group members will be conducted at the end of the course. Technical assistance will be provided as needed. Schedules vary with experiment but all animal measurements and sampling will be completed by early March.

Each member of the group will receive a complete data set for their experiment and will write an individual lab report in the format of a journal paper (*Journal of Animal Science)*. **Please refer to links under "Writing Up your Report" posted on CourseLink for instructions, format and help guides.**

Each group will present their experimental results in the last week of the semester. The format of the presentation may be similar to that of the lab report.

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# 6 Assessments

## 6.1 Assessment Details

**Course Assignments and Tests (0%)**

| Assignment or Test | Due Date | Contribution to Final Mark (%) | Learning Outcomes Assessed |
|---|---|---|---|
| Literature review, development of<br><br>hypotheses and experimental design | January 22 | 15%<br><br>Individual mark | 2, 3, 4, 5 |

| Assignment or Test | Due Date | Contribution to Final Mark (%) | Learning Outcomes Assessed |
|---|---|---|---|
| Presentation of research protocol | January 22 | 10%<br><br>Group mark | 2, 3, 4, 5, 6 |
| Refinement of wet lab protocol | March 5 | 5%<br><br>Individual mark | 1, 3, 5 |
| Laboratory report<br><br>Journal format | April 5 | 40%<br><br>Individual mark | 4, 5, 7, 8 |
| Presentation of results | April 2 | 20%<br><br>Group mark | 4, 5, 6, 7 |
| Participation and contribution for group work | | 10%<br><br>Individual mark | 6 |

**Final Exam (0%)**

There is no final exam for this course. Final presentations will be completed on April 2. Final papers will be due April 5.

# 7 Course Statements

## 7.1 Grading Policies

Hard copies of the assignments should be submitted at my office ANNU room 146 or directly to the TAs by 4:30 p.m. on the due date. Late penalties of 2 % per day will be assessed for late submissions.

## 7.2 Course Policy on Group Work

All groups will determine and agree to expectations for themselves and their fellow group members using a contract with terms given below. At the end of the semester, group members will provide a review of themselves and their fellow group members regarding compliance with the expectations and contract. 10% of the course mark will reflect each student's participation and contribution to the group.

Group Contract

List Group members:

Expectations (grade) for major project:

Five Processes for Effective Teams:

1. How will we make decisions? ( e.g. consensus, leader dictates)
2. How do we make sure that everyone gets a chance to discuss or raise concerns?
3. How will we handle differences amongst us?
4. How will we ensure the completion of our work?
5. How will we change things that are not producing results?

Signatures:

# 8 University Statements

## 8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

## 8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Graduate Calendar - Grounds for Academic Consideration
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

## 8.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for course registration are available in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Graduate Calendar - Registration Changes
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml

## 8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

## 8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

More information can be found on the SAS website
https://www.uoguelph.ca/sas

## 8.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

Graduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

## 8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## 8.8 Resources

The Academic Calendars are the source of information about the University of Guelph’s procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars
https://www.uoguelph.ca/academics/calendars