



# BIO 345 – 1

## Research Methods in Biology

Semester: Fall, 2014  
Days: W/F 8:15-9:30am  
Room: A2141

Number of credits: 3

Prerequisite:  
BIO 131 and 133

Instructor: Dr. Megan Hallam  
Email: mhallam@ambrose.edu  
Phone: 403-410-2000 ext. 7902  
Office: L2066  
Office hours: By appointment

### Course Description:

An introduction to research in Biology with an emphasis on understanding the research process, including literature searches, experimental design, data collection, basic statistical knowledge, and its relationship to critical thinking.

### Expected Learning Outcomes:

It is the aim of the course that students acquire the following skills:

1. Understand scientific method.
2. Conduct a basic scientific literature search and synthesize a review of the literature for a chosen topic.
3. Critically appraise published literature, considering all aspects of research design.
4. Evaluate and understand ethical considerations in scientific research.
5. Understand and apply basic statistical concepts to data sets.

### Important Dates:

First day of classes: September 3, 2014  
Registration revision period: September 14, 2014  
Spiritual Emphasis Day, NO CLASS: September 24, 2014  
Last day to request revised examination: October 27, 2014  
Last day to withdraw from course: November 12, 2014  
Last day to apply for time extension for coursework: November 24, 2014  
Last day of classes: December 9, 2014

**Final Exam: December 12, 2014**  
**Time: 1:00 – 4:00 PM**  
**Room: A2210**

### Requirements:

Written portions of assignments should be completed using a word processor and be double spaced using Times New

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Roman, Arial or similar, in a 12-point font. For assignments which require a hard copy to be handed in the student may choose whether to print the assignment single- or double-sided; assignments consisting of two or more pages must be **stapled** in the top left hand corner. Please include a cover page which includes the name of the assignment, student name, class, professor's name and date; an example will be provided. Unless stated otherwise, all assignments are to be done using full sentences and proper spelling and grammar. Any spelling and/or grammatical errors will result in a 0.5 point deduction per unique error on the assignment.

### **Submission of Assignments:**

All assignments must be handed in electronically using Moodle in .doc or .docx format. Moodle cannot accept Pages files from Mac computers. Certain assignments will also require that a paper copy be submitted in class, these include: Structured Abstract (Sept 19), Full Article Critique (Oct 31), Literature Review (Nov 26).

Turnitin will be used for the Full Article Critique and Literature Review Assignments. This web-based tool will compare your work with numerous sources, including your fellow students, to check for plagiarism. Please ensure you are handing in your own original work and properly citing appropriate sources. A report will be provided to you on Moodle on the due date of the assignment.

**Late assignments:** Excepting the literature review, all assignments are due on a Friday, late assignments will be accepted until the beginning of class the following Wednesday. Late literature reviews will only be accepted until the beginning of class on Friday November 28 as the written review must be handed in prior to the oral presentation. For each day an assignment is late 10% will be deducted from the grade earned on the assignment. Late assignments should be uploaded to Moodle and an e-mail should be sent to the professor to indicate the assignment has been uploaded.

### **Attendance:**

As this course does not have a required text, attendance at lectures is **STRONGLY** recommended and will help ensure success on course exams and assignments. Attendance during peer presentations is mandatory.

### **Evaluation:**

<u>Assignment/Exam</u>	<u>Due Date</u>	<u>Value</u>
Structured Abstract Article	Sept 12	5%
Structured Abstract	Sept 19	5%
Media & Research	Sept 26	10%
Midterm Exam (in class)	Oct 10	15%
Full Article Critique	Oct 31	15%
Literature Review	Nov 26	15%
Literature Review Presentation	Nov 26	10%
Final Exam	(Scheduled by registrar)	25%

### **Grade Summary:**

The available letters for course grades are as follows:

<u>Letter Grade</u>	<u>Percentage</u>	<u>Description</u>
A+	97-100%	

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A	93-96%	Excellent
A-	89-93%	
B+	83-89%	
B	77-82%	Good
B-	70-76%	
C+	67-69%	
C	63-66%	Satisfactory
C-	60-62%	
D+	54-59%	
D	50-53%	Minimal Pass
F	Below 50%	Failure

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## Policies:

All students have received an Ambrose e-mail account upon registration. It is the student's responsibility to check this account regularly as the Ambrose email system will be the professor's instrument for notifying students of important matters (Cancelled class sessions, extensions, requested appointments, etc.) between class sessions. If students do not wish to use their Ambrose accounts, it is highly recommended that they forward all messages from the Ambrose account to the other account.

During the **Registration Revision Period** students may to enter a course without permission, change the designation of any class from credit to audit and /or voluntary withdraw from a course without financial or academic penalty. These courses will not appear on the student's transcript. Courses should be added or dropped on the student portal by the deadline date, please consult the List of Important Dates. After that date, the original status remains and the student is responsible for related fees.

Students intending to withdraw from a course after the Registration Revision Period must apply to the Office of the Registrar by submitting a Request to Withdraw from a Course by the **Withdrawal Deadline**, please consult the List of Important Dates. Withdrawal from courses after the Registration Revision period will not be eligible for tuition refund. A grade of "W" will appear on the student's transcript.

Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

Students, who find a conflict in their exam schedule must submit a **Revised Examination** Request form to the Registrar's Office by the deadline date, please consult the List of Important Dates. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

### Electronic Etiquette

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to engage in electronically-enabled activities unrelated to the class during a class session. Please turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Please do not use iPods, MP3 players, or headphones. Do not text, read, or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. The professor has the right to disallow the student to use a laptop in future lectures and/or to ask a student to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

### Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. Personal information, that is information about an individual that may be used to identify that individual, may be collected as a requirement as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at [privacy@ambrose.edu](mailto:privacy@ambrose.edu).

### Extensions

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Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a “**Course Extension**” from the Registrar’s Office. Requests for course extensions or alternative examination time must be submitted to the Registrar’s Office by the deadline date, please consult the List of Important Dates. Course extensions are only granted for serious issues that arise “due to circumstances beyond the student’s control”.

### Appeal of Grade

An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Office of the Registrar in writing within 30 days of receiving notification of the final grade, providing the basis for appeal. A review fee of \$50.00 must accompany the appeal to review final grades. If the appeal is sustained, the fee will be refunded.

### Academic Integrity

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University College as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else’s ideas, words, or work as one’s own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to give credit to another person’s ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university college. Students are expected to be familiar with the policies in the current Academic Calendar that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student’s permanent record.

Students are strongly advised to retain this syllabus for their records.

**Lecture Outline:** Guideline to class topics by week (Wednesday class date), subject to change.

Week 1	(Sept 3)	Scientific thought. Reporting research. Literature searches.
Week 2	(Sept 10)	Research question and variables. Types of data. Structured abstracts.
Week 3	(Sept 17)	Error. Study design. Sampling.
Week 4	(Sept 24)	SEPT 24 – NO CLASS SEPT 26 – Media and research presentations.
Week 5	(Oct 1)	Bias, confounding, effect modification. Causality. Article critique.
Week 6	(Oct 8)	Review. OCT 10 - MIDTERM

Week 7	(Oct 15)	Article critique.
Week 8	(Oct 22)	Ethics.
Week 9	(Oct 29)	Measures of central tendency. Measuring variance.
Week 10	(Nov 5)	Literature reviews. Z-scores.
Week 11	(Nov 12)	Parametric statistics.
Week 12	(Nov 19)	Non-parametric statistics.
Week 13	(Nov 26)	Literature Review presentations.
Week 14	(Dec 3)	Review.