

BSC 2005 – Biological Sciences for Non-Majors (online)
UF Sections 1B86, 1C00, 1C05, 1C13, 1C21, 1C22, 14DD, 14DF, 14D2, 14EF, 14EG,
14EH, 14E0, 14FG, 14FH, 14F0

UFO Sections 11GB, 1432, 1434, 1435

Syllabus for Spring 2016

I. Course Description

This course addresses core concepts in biology, including the Cell, Genetics, Evolution, Biodiversity, Ecology, and Conservation/Sustainability. For non-majors. 3 credits.

II. Course Meetings

First day of classes: Tuesday 05 January 2016

Last day of classes: Friday 29 April 2016

Final Exam: None

This course is entirely online, with weekly deadlines but no fixed meeting times. Students may work on course material at their own pace from any location with a reliable internet connection, as long as it is completed by the deadline.

III. Instructors

Course Instructor:

Dr. Nicole Gerlach

Department of Biology
Office: 520 Carr Hall
E-mail: ngerlach@ufl.edu

Teaching Assistants:

Ms. Kin Han

Sections: TBA
Department of Biology
E-mail: hankin@ufl.edu

Ms. Ping Huang

Sections: TBA
Department of Biology
E-mail: ping@ufl.edu

Ms. Emily Woodruff

Sections: TBA
Department of Biology
E-mail:
emilywoodruff@ufl.edu

Mr. Cody Howard

Sections: TBA
Department of Biology
E-mail:
cchoward@ufl.edu

Ms. Xiaoxian Liu

Sections: TBA
Department of Biology
E-mail:
xiaoxianliu@ufl.edu

All office hours are by appointment only.

IV. Course Communications

- A. Course Website:** <http://lss.at.ufl.edu> (select Canvas); or <https://ufl.instructure.com/courses/324795>
- B. Contacting Your Instructors:** If you have a question about course mechanics or course material that cannot be answered from the syllabus, course announcements, or the course FAQ, please post it to the Discussion Boards on Canvas (see section VIII. “Getting Help”, below). If you have a question involving a personal/grade-related issue, please e-mail your TA or Dr. Gerlach, as appropriate. All e-mail correspondence must originate from your @ufl.edu account or the Canvas Inbox system, have your full name in the body of the e-mail, and contain “BSC 2005” in the subject line. E-mails not meeting these requirements may not be recognized by our e-mail filters, and thus may not be answered. Barring unusual circumstances, expect a reply within 24 hours during the week, and 48 hours over the weekend. E-mails and Discussion Board posts are checked at least once per day, but sometimes not more than that.
- C. Communications From Your Instructors:** Each student is solely responsible for reading and following the instructions, guidelines and schedules in this syllabus and on the course webpage. Not having read the information in this syllabus, on the webpage, or in course announcements will not constitute an excuse for missing deadlines, assignments, or other assessments. Please set your preferences in Canvas so that you receive timely notifications of course announcements and other information.

V. Course Resources

A. Textbook

Biology for a Changing World, 2e by Shuster, Vigna, Tontono, and Sinha.
Sinauer Associates and W.H. Freeman (publisher), 2014.

Textbook publisher web site:

<http://www.macmillanhighered.com/launchpad/sabiologyphys2e/2820484>

An electronic version of the textbook is included with LaunchPad access (see below). A hard-copy version of the textbook is not required for the course.

B. LaunchPad: Online Resources and Electronic Textbook

LaunchPad is an online assignments and tutorial system from the textbook publisher that will be used for required readings, interactive activities, and quizzes. *LaunchPad* is required for this course and includes the electronic version of the textbook. Go to <http://www.macmillanhighered.com/launchpad/sabiologyphys2e/2820484> to register and purchase access to *LaunchPad* OR you can purchase an access card at the UF Bookstore. If you are waiting on financial aid, you can register for temporary access, but you will have to purchase access once the temporary access expires. When setting up your account, **you must use your Gatorlink (ufl.edu) e-mail address, which will be your username.** Using an e-mail address other than your UFL e-mail address will result in you receiving NO credit for all assignments administrated through *LaunchPad*.

For help with *LaunchPad*, contact *LaunchPad* Technical Support: (800) 936-6899 (phone) or via their web form at <http://support.bfwpub.com/supportform/form.php?View=contact>.

LaunchPad grades will be transferred to the Canvas gradebook periodically, but will also be viewable at any time on the *LaunchPad* website.

C. Course Website (Canvas)

All class material - including the syllabus, lectures, assignments, discussions, quizzes, and gradebook – that is not part of the *LaunchPad* system will be posted on the course Canvas website (<https://ufl.instructure.com>). For help with Canvas, call the UF Computing Help Desk at 352-392-4357, or visit the e-Learning support website: <http://help.instructure.com/>.



D. Course Fee

For UF students, the course fee is \$106.50. For UFO students, this fee is included in tuition.

E. Course Materials

Some activities will require students to acquire additional inexpensive materials for “kitchen experiments”. These include: raisins, salt, rubbing alcohol, and a coffee filter.

VI. Course Policies

A. Time Commitment

The UF College of Liberal Arts and Sciences assumes that each student will devote 3-4 hours per week per credit-hour to each course during the regular semester. Because BSC 2005 is 3 credits, each student should therefore expect to devote 9-12 hours per week to this course in a 15-week semester. During the accelerated 6-week summer session, students should expect to devote **22-30 hours per week** to this course.

B. Attendance

Students are expected to complete all assigned work (quizzes, interactive, discussions, activities etc.) by the due date. Unavoidable circumstances (e.g. hospitalization or family emergencies) that prevent you from completing your work in a timely manner require you to obtain a letter from a medical professional or the Dean of Students office (<https://www.dso.ufl.edu/home/contact-us>) that specifies the time period for which you are excused from classwork, and submit it to your instructors as soon as possible. Otherwise, manage your time wisely and work ahead when you need to. Excuses such as “we didn’t get back from (activity) when planned and I didn’t have time” or “my computer crashed half an hour before the deadline and tech support wasn’t open” will NOT be accepted as excuses for missed deadlines.

C. Computing Requirements

It is the responsibility of the student to maintain a functioning computing system and internet connection. Computing/internet connectivity issues will NOT be acceptable excuses for missed deadlines unless they are brought to the attention of the instructor **at least 48 hours prior to the deadline** and accompanied by the ticket number from technical support. See section VIII for Technical Support contact information. Microsoft Office programs are required for many of the assignments; it can be accessed by current UF and UFO students through GatorCloud: <http://www.it.ufl.edu/gatorcloud/>. Submissions must be made either in an MS Office format (.doc or .docx, .ppt, etc.) or in a generally readable file format (.pdf, .jpg, .txt, etc.); proprietary file formats such as Pages, Keynote, etc. cannot be opened and will not count as an on-time submission.

D. Late Work

Late work will be accepted in Canvas up to 1 week past the due date. Work submitted up to 3 days late will receive a 50% deduction. Work submitted up to 1 week late will receive a 75% deduction. After 1 week you will receive a zero. LaunchPad activities automatically close at the deadline and cannot be submitted late without an excused extension from the Dean of Students (see VI.B above) or a technical support trouble ticket documenting issues with LaunchPad for at least 48 hours prior to the deadline (see VI.C above).

Note that **the last due date of the semester is the last day on which work can be submitted** for credit; no late work will be accepted for the last module.

E. Resubmissions

Quizzes within both Canvas and LaunchPad are graded on the first attempt; please do not start these quizzes until you are ready to complete them. For assignments within Canvas that require a file upload, these may be resubmitted multiple times; we will only consider the most recent submission. However, once a submission has been graded, **even if it is prior to the deadline**, no further submissions will be

considered. Please double-check your file submissions to make sure they have completed and that you have submitted the correct file; submitting an incomplete or incorrect file will result in a zero.

F. Classroom Behavior

Behave with courtesy towards your fellow students and the instructors. This is particularly important in discussion boards where you are voicing opinions and commenting on those of other individuals. Students who persist in being rude will be blocked from future participation (with corresponding loss of points).

G. Office Hours

Office hours for this course are by appointment only, and may be conducted via Skype or a similar service. We cannot meet with students on a drop in basis.

H. Grammar

Correct grammar, punctuation, spelling, capitalization and paragraphing should be used in any college level submission, including the discussion boards. We will take note of spelling and grammar and we will grade accordingly. U SHLD NT US TXT SPEAK LKE IDK OR BFF THX ALSO DNT USE CAPS. Ugh.

VII. UF Policies

A. Academic Honesty

All students registered at the University of Florida have agreed to comply with the following statement:

“I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University.”

In addition, on all work submitted for credit the following pledge is either required or implied:

“On my honor I have neither given nor received unauthorized aid in doing this assignment.”

Academic dishonesty will not be tolerated, and will result in a loss of points for all assignments in the module, as well as additional sanctions. In this course, academic dishonesty includes (but is not limited to) collaborating with other students on course assignments, discussing quiz questions or answers with other students, giving other students the password for locked quizzes, and plagiarism. . Please review how to define plagiarism and how to avoid it: <http://web.uflib.ufl.edu/msl/07b/studentplagiarism.html>

If you have knowledge of any instances of academic dishonesty in this class, please notify the instructor or contact the Student Honor Court (392-1631) or Cheating Hotline (392-6999). For additional information on Academic Honesty, please refer to the University of Florida Academic Honesty Guidelines at: <https://catalog.ufl.edu/ugrad/current/advising/info/student-honor-code.aspx#honesty>.

B. Accommodations for Students With Disabilities

Students who will require a classroom accommodation for a disability must contact the Dean of Students Office of Disability Resources, in Peabody 202 (phone: 352-392-1261). Please see the University of Florida Disability Resources website for more information at: <http://www.dso.ufl.edu/drc/>. When possible, the student should provide documentation of a requirement for accommodation to Dr. Gerlach by the second week of classes. No accommodations are available to students who lack this documentation, and accommodations are not retroactive. It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed. Once notification is complete, the Dean of Students Office of Disability Resources will work with the instructor to accommodate the student.

C. Drop/Add/Withdrawal

A student can drop/add during the drop/add period with no penalty. After drop/add, a student who drops will receive a W until the date listed in the academic calendar. After that date, the student may be

assigned an “E” (fail). **Note: it is the responsibility of the STUDENT to withdraw from a course, not the instructor. Failure to participate/complete the class does NOT constitute a drop.**

D. Course Evaluations

Anonymous course evaluations will be open via UF’s online evaluations system (<https://evaluations.ufl.edu>) near the end of the semester; you will receive e-mail notifications of when the evaluations open. We do take student feedback into account when planning future semesters; please let your instructors know if there are particular modules and/or activities that you found helpful or that you would have liked to cover in more depth, as well as any that you found less useful.

VIII. Getting Help

A. Computing Problems

For issues with technical difficulties in Canvas, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 1
- <https://lss.at.ufl.edu/help.shtml>

For issues with LaunchPad, please contact LaunchPad technical support at:

- (800) 936-6899
- <http://support.bfwpub.com/supportform/form.php?View=contact>

B. University Support Services

College can be a very stressful time in a person’s life. Resources are available on campus to help students meet academic goals and solve personal problems that may interfere with their academic performance. If you find that you are having difficulty emotionally or academically, there is substantial support available. See “[A Self Help Guide for Students](#)” or contact on of the following services:

1. [UF Counseling and Wellness Center](#), Radio Rd Facility, 392-1575
2. [Dean of Students Office](#), 202 Peabody Hall, 392-1261
3. [Career Resource Center](#), Reitz Union, 392-1601
4. [CLAS Academic Advising Center](#), Farrior Hall, 100 Fletcher Drive, 392-1521

C. Other Questions

If you have non-tech-support questions about other aspects of the course, check the following sources first to see if it is already answered, **before** e-mailing your instructors:

- Course Syllabus
- Start Here / About Canvas / About LaunchPad / About Modules pages
- Course Announcements (this is the primary means that your instructor has to communicate with you in a timely manner)
- Course FAQ or Module-specific Questions Discussion Boards

If you still cannot find the answer to your questions:

- If it is a question that others might find useful to know the answer to as well, post it to the discussion board – either the Discussion Board for the particular unit for questions on course topics, or the general Discussion Board for questions about course mechanics.
- If it is a question specific to you (e.g. account or grade specific), contact Dr. Gerlach or your TA via e-mail.

IX. General Education

A. General Education Classification

BSC 2005 meets the general education requirements for Biological Sciences.

B. Program Area Objectives

Biological science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the life sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern biological systems. Students will formulate empirically-testable hypotheses derived from the study of living things, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

C. General Education Student Learning Outcomes

The general education student learning outcomes (SLOs) describe the knowledge, skills and attitudes that students are expected to acquire while completing a general education course at the University of Florida. The SLOs fall into three areas: content, communication and critical thinking.

1. Content: Students demonstrate competence in the terminology, concepts, methodologies and theories used within the discipline.

2. Communication: Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the discipline.

3. Critical Thinking: Students analyze information carefully and logically from multiple perspectives, using discipline specific methods, and develop reasoned solutions to problems.

D. General Education in the Context of This Class

Each module will contain between 1-3 activities worth between 10 and 30 points each; this represents approximately 35% of the final grade. The purpose of these activities is to encourage students to think about Biology outside the framework imposed by the textbook or instructor lectures by giving them the opportunity to develop their own materials to support or reject existing scientific hypotheses. Hypothesis testing is most explicitly addressed in the first module, on the scientific method. Students will gain practice formulating hypotheses and analyzing experimental data throughout the class, in various activities that involve virtual and/or “kitchen” experiments. Activities that include an emphasis on hypothesis testing are marked on the schedule below with ‡.

For each activity, students are provided with specific instructions for completing the activity as well as a grading rubric. The grading rubrics are designed to evaluate the student’s mastery of specific content and their ability to produce bodies of work within the guidelines specified in the instructions. Some examples of activities types include: research using reliable web sources, expository writing, video reviews, “kitchen experiments”, inquiry activity sheets, and construction of figures and tables.

The course also includes nine discussions, in which students answer an open-ended discussion prompt regarding the ethics and application of biology in daily life. Students will be expected to provide a thoughtful answer to the initial prompt, as well as to respond to the answer of at least one of their classmates, in order to foster critical thinking skills within a learning community.

X. Assessments and Grading

A. Course Structure and Due Dates

This course is divided into fifteen modules, with one due each week of the semester. During the summer session, two or three modules will be due each week. Modules open for work on the Friday of each week,

and **all materials except your first discussion board post (see below) are due by 11:59 pm the following Friday.** There are two exceptions:

- The due date for the first module has extra time to accommodate add/drop, registration, and set-up, although the second module follows the normal Friday – Friday schedule.
- The final module will be due by 11:59 p.m. on the last Friday of the semester to accommodate the schedule of when final grades are due to the registrar. **No late work will be accepted after this deadline.** This module will open early to allow you sufficient time to complete the assignments; please plan your time wisely!

The due dates for each module are listed on the last pages of the syllabus, and will also be listed on each module's page within Canvas.

The deadlines are all at 11:59 p.m. Late submissions, even by a few minutes, will be subject to the late work policy (see section VI.D), and the Canvas and the LaunchPad systems may close you out of an unfinished quiz if you pass the deadline while you are taking a quiz. **Please do not wait until the last minute to begin!**

B. Coursework

Each unit will consist of various materials to read/watch, activities to complete, and quizzes to take. All required activities and assignments for each unit (including those in LaunchPad) will be listed on that module's page on Canvas. The various pieces that might be included in a unit are outlined below. The activities vary in how many points they are worth but each module is worth ~85-100 pts overall.

1. LaunchPad (~40% of total points)

- a. **Read the chapter(s).**
- b. **Interactive infographics.** There are typically 3-4 per chapter, worth 2 points each when completed.
- c. **Learning Curve:** These are adaptive quizzes, where the questions get harder or easier depending on how you do. You're not penalized for getting questions wrong, but you need to reach a certain level of question for each unit. Once you reach that level, you receive full credit (10 pts) for the unit. After that point, you can continue answering questions to review the material without affecting your score.
- d. Take the **Chapter quiz** over the reading; typically worth 18-30 pts. Questions are worth 1.5 points apiece.

2. Canvas (~60% of total points)

- a. Watch the **lecture videos.**
- b. **Discussion posts.** Some units have a discussion topic worth 10 points; 6 points for your **initial post addressing the discussion prompt, which is due three days before the rest of the material** (i.e. 11:59 p.m. Tuesday for a module due 11:59 p.m. Friday), and 4 points for your reply to one (or more!) of your classmates' posts (due with the rest of the module materials at 11:59 p.m. on Friday). Discussion board posts and replies should each be about a paragraph long (minimum 3-4 meaningful sentences) and should reflect some critical thought in response to the prompt or classmate's post (e.g. "Yes, I agree. Good post!" is not a sufficient response.) All posts should be composed of logically and syntactically valid sentences with proper spelling and grammar.
- c. **Activities.** These are activities that will ask you to read something, watch something, do something, or write something related to the topic of the unit. There are two types of activities in this course, based on how you get credit for them.
 - i. The first type requires you submit your work (a short essay, a completed worksheet, etc.) by uploading it to the corresponding Assignment in Canvas. These are marked on the schedule below with (S).

- ii. For the second type, instead of submitting your completed work, you will use it to answer questions about the activity on the corresponding quiz on the Quizzes page in Canvas. These are marked on the schedule below with (Q).
- iii. In some units there are worksheets linked from the Module's page that don't have a separate quiz or anything to submit, but material from these assignments will appear on the Lecture Quiz for that unit.
- d. **Lecture Quiz.** These quizzes cover material from the entire unit, with a focus on the lecture material. Questions are worth 1 point apiece.

Recommended Order: You can complete the various assignments for each unit in any order that you want, *as long as they are all complete by the due date*. However, I would recommend reading the chapter, watching the lectures, and completing the infographics first; answering the discussion prompt, doing the learning curve quiz, and completing the activities second; and completing the chapter quiz (on LaunchPad) and the lecture quiz (on Canvas) last, once you are confident with the material.

C. Grading

Grades from assignments, discussions, and lecture quizzes will be posted on Canvas throughout the semester. Grades from LaunchPad will be accessible throughout the course on the LaunchPad gradebook, but will only be transferred to the Canvas gradebook periodically. Please take this into account when looking at the Canvas gradebook! It is the responsibility of the student to check their grades on Canvas and to let instructors know about discrepancies **within one week of the grades being posted to Canvas**.

Minimum grade cutoffs are listed below. The scores for the course as a whole will not be curved (i.e. these grade cutoffs will not be lowered) except under extremely rare circumstances (i.e., unless we tell you otherwise these cutoffs will not be lowered, so do not ask). However, these cutoffs will not be raised; in other words, if you receive 93% of the possible points, you are guaranteed to earn an A grade. Final scores will be rounded to one decimal place but will NOT be rounded beyond that (e.g., 89.92% will be rounded to 89.9%, not 90%).

Point Range (%)	Letter Grade
≥ 93	A
≥ 90	A–
≥ 87	B+
≥ 83	B
≥ 80	B–
≥ 77	C+
≥ 73	C
≥ 70	C–
≥ 67	D+
≥ 63	D
≥ 60	D–
< 60	E

Note that the current UF policy for assigning grade points is available at the following undergraduate catalog web page: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

- D. **Incomplete (“I”):** If a student has completed the majority of the course work with a passing grade and particular DOCUMENTED circumstances prevent completion of the course in the time allotted, the student may, with the agreement of the instructor, be assigned an “I” pending resolution of the grade. All incompletes MUST be resolved by the end of the following term or the student will receive a grade of “E” (failing).
- E. **Extra Credit**
Extra credit assignments may be offered at the instructors’ discretion; if extra credit is offered, it will be open to all students and will be clearly announced on the course website. No individualized extra credit will be offered.
- F. **Special Treatment**
Please do not request individual special treatment regarding grading at the end of the semester; **we do not adjust grades for individuals for any reason.** Plan to do well on all quizzes and other assignments from the beginning of the semester; if you are having difficulty in the class, please let your instructors know sooner rather than later.

XI. Disclaimer

This syllabus represents the current plans and objectives; however, schedules, requirements, and assignments may change throughout the semester as the need arises. Such changes, communicated clearly, are not unusual and should be expected.

XII. Weekly Course Schedule

Unit	Due date*	Chapter	Topic	LaunchPad	Discussion	Activities**	Lecture Quiz
1	Wednesday 13 January 11:59 p.m.	1	Process of Science	Infographics Learning Curve Chapter Quiz	Introduce Yourself AND Process of Science	Cricket Experiment (Q) ‡ Hypothesis Testing (S) ‡	Module 1
2	Friday 15 January 11:59 p.m.	3	Cell Structure & Function	Infographics Learning Curve Chapter Quiz	n/a	Osmosis: Fish & Raisins (Q) ‡ Build a Cell (S)	Module 2
3	Friday 22 January 11:59 p.m.	5	Energy Flow & Photosynthesis	Infographics Learning Curve Chapter Quiz	Artificial Photosynthesis	Artificial Photosynthesis (Q) Pigment Chromatography (S) ‡	Module 3
4	Friday 29 January 11:59 p.m.	7	DNA & Genetics	Infographics Learning Curve Chapter Quiz	Ethics in genetic fingerprinting	What is DNA? (Q) Virtual Genetics Lab (Q) Stolen Artifacts (Q, S) ‡	n/a
5	Friday 05 February 11:59 p.m.	11-12	Inheritance	Infographics Chapter Quizzes	n/a	Genetics and Inheritance (Q) Blood Tests and Babies (Q)	n/a
6	Friday 12 February 11:59 p.m.	14	Natural Selection & Adaptation	Infographics Learning Curve Chapter Quiz	Evolutionary ideas and misconceptions	Pocket Mouse Selection (Q) Sticklebacks and Selection (Q) Evolution in our World (S)	Module 6
7	Friday 19 February 11:59 p.m.	15	Species & Speciation	Infographics Learning Curve Chapter Quiz	n/a	Ants and Selection (S) ‡ Lab Bench Virtual Experiment (Q) ‡	Module 7
8	Friday 26 February 11:59 p.m.	16	Evidence for Evolution	Infographics Learning Curve Chapter Quiz	Ethics in Paleontology	Fossil Whales (Q) Dino Dig (Q) ‡	Module 8

Unit	Due date*	Chapter	Topic	LaunchPad	Discussion	Activities**	Lecture Quiz
SPRING BREAK							
9	Friday 11 March 11:59 p.m.	20	Human Evolution	Infographics Learning Curve Chapter Quiz	Human Speciation	Becoming Human (Q)	Module 9
10	Friday 18 March 11:59 p.m.	17	Life on Earth	Infographics Learning Curve Chapter Quiz	n/a	Elephant Phylogeny (S) ‡	Module 10
11	Friday 25 March 11:59 p.m.	18	Prokaryotes	Infographics Learning Curve Chapter Quiz	Prokaryote Diversity	Gut Microbes (Q) Prokaryote Diversity Chart (Q) Prokaryote Symbioses (S)	n/a
12	Friday 01 April 11:59 p.m.	19	Eukaryotes	Infographics Learning Curve Chapter Quiz	n/a	Eukaryote Diversity (S) Plants and Fungi Chart (Q)	n/a
13	Friday 08 April 11:59 p.m.	21	Population Ecology	Infographics Learning Curve Chapter Quiz	Prime Directive	Paramecium Activity (Q) ‡ Isle Royale Wolves & Moose (S) ‡	Module 13
14	Friday 15 April 11:59 p.m.	22	Community Ecology	Infographics Learning Curve Chapter Quiz	n/a	Sea Otters (Q) Food Web Parts I & II (S)	Module 14
15	Saturday 23 April 11:59 p.m.	23-24	Ecosystem Ecology & Sustainability	Infographics Chapter Quiz	Human Impacts	Ecological Footprint Quiz & Survey (Q) Hot Planet (Q) Ecosystems and a Warming Earth (S)	n/a

Note: This schedule is subject to change; the most up-to-date listing of the required assignments for each module will be found on that module's webpage.

* Modules with a discussion have the first discussion post due three days before the due date for the rest of the material.

**Q: Activity assessed by a quiz; S: Activity assessed by submitted work.

‡: Activity includes an emphasis on formulating and/or testing hypotheses