IAI GECC Life Sciences Panel
Course Approval Criteria
Revised Spring 2026

An institutionally approved representative syllabus in electronic format is required by the panel for its review. Institutions should submit an actual and recent instructor syllabus which is not more than three years old. If the course is yet to be taught, a sample syllabus intended for future students is still required.

The representative course syllabus and any additional submission materials must include:

- **Course prefix, number, and title:** e.g., IAI 101 Introduction to Transferring in Illinois
- **Course description:** Including the full catalog course description is required. The course description should compare favorably with the proposed IAI course description.
- **Number of credit hours**: For combined lecture and lab/studio courses, please include lecture credit hours, lab/studio credit hours as well as contact hours for lecture and lab/studio components. Indicate if these are semester or quarter hours.
- **Prerequisites and co-requisites**: If prerequisites are required for a course, it is preferred that the course prefix, course number, course name, and when IAI approved, the IAI code, are included in the submitted syllabus. Important note: as a rule, general education (GECC) courses in IAI should not have prerequisites. There are a few exceptions to this rule for sequences such as written composition and calculus; see panel specific information. Major courses may have prerequisites as appropriate. Co-requisite courses should show the credit hour breakdown between the two courses.
- **Textbooks, additional readings, additional course materials**: Please note if different resources are required for different delivery modes. Course materials should reflect content outcomes and requirements, and should be recently produced. For published texts, please include author, title, edition, date of publication, publisher, and the ISBN. If the course utilizes online or OER materials, please include an active hyperlink; hyperlinks cannot be embedded in the LMS nor be blocked by a password because the panel needs to have full access to the resource.
- **Delivery mode**: traditional/nontraditional, in-person/online/hybrid, etc.
- **Course Objectives**: The course objectives should clearly support the course description.
- **Assignment descriptions**: Please include a detailed description of assignments, readings, projects, etc. Assignment details should be clearly evident and referenced, and show connection to the course learning objectives. Assignments should demonstrate the rigor and scope of the course.
- **Methods of evaluating student learning**: The syllabus should state clearly how learning outcomes will be assessed, such as through objective/subjective examinations, quizzes, written assignments, oral presentations, projects, etc.
- **Grading scale and assignment weighting:** Please provide a grading scale and indicate the relative weight of assignments or evaluation categories (e.g., exams, essays, projects, etc.).
- **Detailed course outline, daily/weekly/hourly schedule**: A detailed topical outline and weekly schedule that ***goes beyond chapter numbers and titles from a textbook*** ***(or select readings)*** must be included and it should provide specific details of topics being presented in class. This may include assignments, readings, projects, etc. as appropriate. This could be done using a few bullet points or a couple of sentences. This level of detail is also appropriate for the lab/studio outline in courses that contain a lab or studio component. The lab/studio outline should include similar information but also detail the tools, materials, equipment, and instruments being used and the outcomes or topics that the students will be exploring.

General Coding Practice:

A course can only be assigned to one IAI code/description per panel. Institutions should be clear and careful in determining which IAI code is identified for any syllabus submitted for approval. The institution should also ensure that the course meets the minimum semester credit hour requirement included with the IAI course description.

A student may "count" only one course per code in fulfilling transfer requirements, even though an institution may assign more than one course to a code. In some cases, however, students at schools on a quarter calendar may need to complete two courses to equate to a one-semester course. An equivalency in this circumstance would be three quarter-credits equals two semester credit hours and five quarter-credits equal three semester credit hours.

Panel Specific Requirements:

Note: The panel uses a representative instructor syllabus to assess whether a course meets the general education requirements. If any additional documents are supplied, please ensure that they agree with the syllabus. An example syllabus is provided at the end of this document. The panel does not require a syllabus to follow a particular format, however, the syllabus must include the items on page one.

Note: The panel cannot approve a course in which there are insufficient contact hours or lab hours for the credit hours granted. For example, labs are typically around 30 contact hours per semester.

Prerequisites:

- The panel cannot approve a course that has a college-level life science course as a prerequisite, except for a lab course that is a companion to a GECC-approved lecture course with the same course code. High school biology or college chemistry are acceptable.
- Prerequisites should be included with departmental course information and full course titles as well as any IAI codes associated with the prerequisites.
    - E.g., 0000 555 High School Biology, ENG 101 - Writing 1 - C1 901.
- If there is no prerequisite, state "None".

Weekly (or detailed) topical LECTURE outline:

- A course must cover a breadth of foundational biology concepts including topics in molecular biology (Central Dogma, DNA replication, DNA transcription, gene expression), cellular biology, organismal biology including structure/function, evolution, and ecology as appropriate to the specific IAI course descriptor. These topics must be clearly presented in the detailed topical outline.
- Placement of material within the semester (e.g. Week (or Unit) 1, Week (or Unit) 2, etc.).
- Each weekly topic is broken out into **detailed subtopics**.
- **Detailed description of lecture topics**. This is not the same as learning outcomes. (See sample syllabus at the end of this document.)
- Methods of assessing student outcomes (e.g. pre and post quizzes, lecture exams, lab exams, lab notebook, current event plant assignments, peer evaluation of notebook, field trip report, lab review assignments, etc.).
- Integrated science process skills and societal relevance of the scientific concepts should be interwoven throughout the lecture material. These components are commonly highlighted in the detailed topical outline in two ways (see the example syllabus).

- Highlight or otherwise label the **integrated science process skills** in each topic. Specific examples of integrated science process skills being evidenced throughout a course can be found in the example syllabus at the end of this document.
    - Panel members are looking for sufficient evidence of integrated science process skills as described here: https://narst.org/research-matters/science-process-skills.
    - **"Basic" science process skills may not be considered as "integrated" science processing skills**.
    - Examples of integrated science process skills in lecture courses may include but are not limited to:
        - Examination, analysis, or discussion of authentic data sets.
        - Analysis and interpretation of graphs and other visual representations of data.
        - Reading and analyzing scientific investigations; identifying components of a scientific investigation by reading either primary literature itself or a summary from a reputable source (i.e. *Science News*).
        - Reading, analyzing, and discussion of the presentation of science topics in general media.
        - Identifying sound, unsound, or biased sources of science information in the media.
    - In a lecture-only course, integrated science process skills should be included in at least **25%** of course topics.
    - In a stand-alone lab course, integrated science process skills should be included in at least **50%** of course topics or lab time.
    - In a combined lecture-lab course, integrated scientific process skills should be covered in at least 50% of the lab time in the lab portion and may optionally be covered in the lecture.
- Highlight or otherwise label the **societal/personal relevance** where applicable. Examples of societal relevance components being evidenced throughout the course can be found in the example syllabus at the end of this document.
    - In a lecture-only course, the societal relevance component should be included in at least **25%** of course topics.
    - In a lecture-lab course, the societal relevance component should be included in at least **25%** of course topics or lab time. It is acceptable to have the societal components in only the lecture portion of the course.

Weekly (or detailed) summary of each LAB activity:

- A lab course may not be approved if more than **25%** of the labs are comprised of non-lab and/or non-hands-on activities including "point-and-click-only" simulations, worksheets, coloring, movies/videos, discussions, guest speakers, field trips (hands-on field work and activities are acceptable), demonstrations, reviews, and exams in any combination.
- Panel members are looking for sufficient evidence of integrated science process skills as described here: https://narst.org/research-matters/science-process-skills
- **"Basic" science process skills may not be considered as "integrated" science processing skills**.
- In a lab course, students should be engaged in active, hands-on development of integrated science process skills in three broad areas:
    - Making observations, formulating hypotheses and predictions.
        - Making scientific observations.
        - Asking scientific questions.
        - Developing hypotheses.
        - Making predictions.
    - ○ Designing investigations and conducting experiments.

        - Designing and conducting investigations.
        - Identifying variables in experiments.
        - Collecting authentic data from an investigation conducted by the students.
    - ○ Analyzing data and evaluating conclusions.
        - Performing statistical analysis.
        - Organizing and presenting data in tables and/or graphs.
        - Drawing conclusions about hypotheses using data.
        - Communicating about an investigation, results, and conclusions through written assignments or oral presentation.
        - Critiquing an experimental design.
- The above activities from each of the three areas must be evident across **50%** or more of the lab portion of the course.

Syllabus Example

BIO 112
HUMAN BIOLOGY
Fall/Spring 20##
(*3 lecture hours; 2 lab hours*)

Required material:

Darwin, Charles. *Human Biology* 4e. 20##. Publishers Anonymous.
Lab Packet for Bio 112 (to be purchased at the college bookstore). Self-published.

Prerequisites:

MAT 097; ENG 098

Catalog description:

This laboratory course will expose students to the breadth of biological concepts by including evolution, cell and molecular biology, human genetics and heredity, human structure and function, and ecology. Evolution is a foundational concept that should be included in every biological sciences course. This general education course will emphasize the value and contributions of life science to society.

Weekly Topical Lecture Outline Examples:

Only the equivalent of three weeks of a sixteen week course is covered for purposes of this sample. Submitters will need to submit complete lecture coverage AND a brief description of EACH lab if it is a lab course.

WEEKLY LECTURE OUTLINE EXAMPLE #1
(A bad example and a very common mistake submitters make)

Week 1 - Introduction to Science
- Chapter 1

Week 2 - Evolution and Humans
- Chapter 2

Week 3 - Ecology and Humans
- Chapter 3

No one knows what these mean except the course instructor who is intimately familiar with the textbook. What topics does "Evolution and Humans" include? This is unacceptable as a weekly topical outline and a submission like this will be returned.

WEEKLY LECTURE OUTLINE EXAMPLE #2
(A good option to present lecture information)

Week 1 - Introduction to Science

- Identify the steps in the scientific method.
- Differentiate between integrated and basic scientific processes.
- Explain why falsifiability is important in science.
- Differentiate between science and pseudoscience.
- Identify at least three instances in American culture when an organization or individual claims to have scientific backing but is really using false science and then explain why their claims may not be scientific.
- Correctly determine whether an hypothesis is accepted or rejected from an authentic data set in a scientific case scenario.

Societal relevance

Week 2 - Evolution and Humans

- Describe how evolution is observed in populations and not individuals.
- Describe five mechanisms of evolution (natural selection, genetic drift, mutation, nonrandom mating, migration).
- Identify examples in society how an understanding of evolutionary principles improves medicine and agriculture.
- Describe the major evolutionary milestones that occurred among the hominins that contributed toward the emergence of modern humans.
- Describe the major competing hypotheses that best describe how modern humans relate to modern apes.
- During an in-class simulation with white and black beans, students are to track allele frequency changes in a population with a selective mechanism acting on the individuals in a population. Students are to graph the change in allele frequencies over time for each allele.

Science process skills

Week 3 - Ecology and Humans

- List the major hierarchies of life as they pertain to ecology.
- Describe how biologists measure population size and structure.
- Explain what demography is.
- Describe what carrying capacity is and the major factors that may go into determining the carrying capacity of humans on our planet.
- Explain how societal factors can influence a country's population size and structure.
- Explain if a population is increasing, decreasing, or stabilized based on that population's age structure diagram.

Lab Descriptions Examples: (only the equivalent of three weeks of a sixteen week course is covered for purposes of this sample)

WEEKLY LAB SUMMARY EXAMPLE #1
(A bad example and a very common mistake submitters make)

Weekly Lab Schedule

- Week 1 - Scientific Method
- Week 2 - Human Evolution
- Week 3 - Size and Structure of Human Populations

This is a list of lab topics but does not give any detail about what students will be doing during the lab time. This is not acceptable for a list of lab descriptions and will be returned.

WEEKLY LAB SUMMARY EXAMPLE #2
(A good option to present lecture information)

Lab 1 - The Scientific Method

Students generate a hypothesis regarding the relationship of exercise on heart rate and breathing rate. Students collect data regarding the effects of a type of exercise on heart rate and respiration. Students are to graph this data and formulate a conclusion regarding their hypothesis. Discussions occur regarding the controlling of variables, collecting data, graphing, and forming proper conclusions. Students also discuss the physiological benefits of exercise.

Lab 2 - Human Evolution

Students generate a hypothesis as to which of five hominin skulls is the most ancestral hominin species. Students qualitatively assess specific features of hominin skulls and rank them in evolutionary order. Specific features that are assessed may include: face/brain ratio, brow ridges, canines, foramen magnum, profile muzzle, chin, dental arcade, and jaw size. Students then formulate a conclusion based on the data they collected.

Lab 3 - Size & Structure of Human Population

Students work through an online activity that explores the challenges different countries face given their population size and structure. Students will observe authentic data from various countries. From this data they will construct age structure diagrams and compare diagrams from various countries and discuss the factors that may be contributing toward each country's diagram being different.