

## **OWG 9 Science Approved Recommendations**

1. Recommends no changes the Forensic catalog descriptions.
2. Recommends courses that are common to both DSC and ASU in Area F Foundations:

### **ISCI 2001 - Foundations of Life/Earth Science (3)**

**An integrated overview of the core Life and Earth Science content covered in the K- 5 Georgia Performance Standards. Topics include the Solar System, Earth Processes, Cells and Cellular Processes, Characteristics and Classification of Living Organisms, Biodiversity, Ecology and the Natural History of Georgia. Students will gain conceptual understanding through Inquiry-Oriented, Activity-Based pedagogical strategies in order to have experience learning science content in the ways they will be expected to teach in the future. There is a laboratory component. Prerequisite: Teacher Education major status or permission from the instructor.**

**Offered: Fall, Spring and Summer (as needed).**

### **ISCI 2002 - Foundations of Physical Science (3)**

**An integrated overview of the core Physical Science content covered in the K- 5 Georgia Performance Standards. Topics include the Energy, light, heat, sound, electricity, magnetism, matter, periodic table, periodic trends, chemical reactions and conservation of energy and matter. Students will gain conceptual understanding through Inquiry-Oriented, Activity-Based pedagogical strategies in order to have experience learning science content in the ways they will be expected to teach in the future. There is a laboratory component. Prerequisite: Teacher Education major status or permission from the instructor.**

**Offered: Fall, Spring and Summer (as needed).**

3. Recommends that Chemistry courses common to both institutions have the following course numbers, names, and descriptions:

**CHEM 1151K, Survey of Chemistry I, "This course is the first in a two-semester sequence covering elementary principles of general and organic chemistry and biochemistry designed for allied health profession majors. Topics to be covered include elements and compounds, chemical equations, nomenclature, and molecular geometry. Laboratory exercises will supplement the lecture material.**

**Prerequisite(s): Completion or exemption of all learning support and English requirements; MATH 0099, MATH 0987, MATH 0989, or satisfactory math scores to place into co-requisite remediation or higher."**

**CHEM 1211K, Principles of Chemistry I**, “First course in a two-semester sequence covering the fundamental principles and applications of chemistry designed for science plans of study. Topics to be covered include composition of matter, nomenclature, stoichiometry, solution chemistry, gas laws, thermochemistry, quantum theory and electronic structure, periodic relations, and bonding. Laboratory exercises supplement the lecture material.

Prerequisites: Completion or exemption of all learning support requirements.

Corequisites: MATH 1111 or satisfactory math scores to place into MATH 1112 or higher.”

**CHEM 1212K, Principles of Chemistry II**, “Second course in a two-semester sequence covering the fundamental principles and applications of chemistry designed for science plans of study. Topics include molecular structure, intermolecular forces, properties of solutions, reaction kinetics and equilibria, thermodynamics, and electro-and nuclear chemistry. Laboratory exercises supplement the lecture material.

Prerequisite: CHEM 1211K.”

**CHEM 2301K**, Organic Chemistry I, “This course will cover the stereochemistry, properties, as well as methods of preparation and mechanisms of the principle classes of carbon compounds. Laboratory instruction will include basic techniques for preparation, purification and identification of organic compounds. Laboratory exercises supplement the lecture material.

Prerequisite: CHEM 1212K.”

**CHEM 2302K**, Organic Chemistry II, “This is a continuation of CHEM 2301K, a systematic study of the reactivity of organic compounds as well as their identification by spectroscopy. Laboratory exercises supplement the lecture material.

Prerequisite: CHEM 2301K.”

**NOTE: All courses will remain 4 credit hours:**

**4. Recommends that all laboratory science courses have the lecture and laboratory portions consolidated into a single course.**

**5. Recommends that the following tracks should be added to the BS in Biology degree in addition to the current biomed track and biotec concentration:**

**A. Research Track with following courses:**

- (i) **BIOL 2000 - Foundations of Research I:** Critical Reading of the Biomedical Literature (1 credit hour): This course is the introductory course of the research track designed

for biology majors to gain competence as biomedical scientists. The goal of this course is to introduce students to the various types of research literature (primary, secondary, articles for the public, etc.) for developing competence in the use of literature sources. A necessary part of the course is learning how to search for relevant biomedical literature. Students will use common electronic search engines such as PubMed, SciFinder Scholar, Web of Science, MedLine, Psychology Abstracts, and Science Citation Index etc. to gain experience and generate an annotated bibliography of references pertinent to his/her research project.

**Prerequisite:** None

- (ii) **BIOL 2240 - Foundations of Research II: Formulating Hypothesis Driven Research and Ethics of Research** (2 credit hour): This is the second course for research track to build student confidence in formulating hypotheses and designing experiments. To ensure that students think ethically when doing so, this course also includes an introduction to the ethical issues that arise in research. Through case studies and review of literature, the course will present hypothesis-driven research from diverse areas related to biomedical science.

**Prerequisite:** BIOL 2000 or permission of the instructor

- (iii) **BIOL 4223 - Foundations of Research III: Communication of Biomedical Information** (1 credit hour): As the third and final course of the Research track, this course will provide students the formal context to become critical writers and speakers of biomedical information. Student competence is enhanced through exercises that demonstrate the need for effective written and oral communication. Students will learn to critique scientific literature; thereby, helping them to improve their own writing. Students will prepare both written and oral presentations of their research and results. Oral communications include a 3-minute elevator talk, a 10-minute presentation, and a 20-minute seminar. Written communications include posters in the formats of the professional societies in their disciplines.

**Prerequisite:** BIOL 2240

## **B. Bioenergy Track with following courses:**

- (i) **BIOL 2501 - Introduction to biomass** (2 Credit hours): As the introductory course for students in the bioenergy track, this course is designed to introduce students to the source of bioenergy, which is biomass. Topics include defining biomass, sources of biomass, processing biomass, uses of biomass, and the role of environment and pollution in biomass production.

**Prerequisite:** BIOL 2107 K

- (ii) **BIOL 3103 - Fundamentals of Bioenergy** (3 credit hours): This course expands upon the concepts introduced in BIOL 2501. The course introduces students to the application of biomass in the bioenergy field. Topics include defining bioenergy,

sources of bioenergy, and the social, political and economic effects of using bioenergy.

**Prerequisite:** BIOL 2501B

**C. Public health track with following courses:**

- (i) **BIOL 2330 - Principles of Epidemiology in Public Health (3 credit hours):** This course is first of two courses offered for student pursuing the track in public health. Principles of Epidemiology provides an overview of epidemiology methods used in research studies that address disease patterns in community and clinic-based populations. Topics covered include distribution and determinants of health-related states or events in specific populations and application to control of health problems.

**Prerequisite:** BIOL 2107K

- (ii) **BIOL 3801 - Environmental Health Concepts in Public Health (2 credit hours):** As the second course for student's pursuing the track in public health, this course provides a survey of major topics of environmental health. Topics include sources, routes, media, and health outcomes associated with biological, chemical, and physical agents in environment; effects of agents on disease, water quality, air quality, food safety, and land resources; current legal framework, policies, and practices associated with environmental health and intended to improve public health. **Prerequisite:** BIOL 2330

**D. Food Safety track with following courses:**

- (i) **BIOL 2601 - Introduction to Foodborne Diseases (3 credit hours):** This course is one of the two courses offered for students completing the track in food safety. This is an intermediate level course, which will introduce students to the major pathogens associated with foodborne diseases, their epidemiology, and approaches to outbreak investigation and control of foodborne illness.

**Prerequisite:** BIOL 2107K

- (ii) **BIOL 3201 - Fundamentals of Public Health Nutrition (2 credit hours):** This course is one of the two courses offered for students completing the track in food safety. This course will provide an introduction to Public Health Nutrition and the role of the Public Health Nutrition professional. Emphasis will be on definition, identification and prevention of nutrition related disease, as well as improving health of a population by improving nutrition. Malnutrition will be discussed on a societal, economic, and environmental level. It will include the basics of nutritional biochemistry as it relates to malnutrition of a community and targeted intervention. Finally, it will review existing programs and policies, including strengths, weaknesses and areas for modification or new interventions.

**Prerequisite:** BIOL 2107K