

The Indiana Academy for Science, Mathematics, and Humanities
SCI04313 Biology II: Introduction to Nutrition

Instructor: Donald Winslow, Ph.D.

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Office hours: MWF 9:00-10:30; Tuesday 9 AM-noon and 2-2:30 PM; Thursday 9:00 AM-11:00 AM

Class meetings: In Burris 211. MWF 4-4:50 PM; Lab Tuesday 4-5:45 PM

Description:

From the course catalog (<https://academy.bsu.edu/catalog/>):

Prerequisite: None

Co-requisite: Biology II: Introduction to Nutrition Lab (SCI04313L)

Credit: 1.5 credits

Offered: Fall

This course will explore the general principles of nutrition that are needed for optimal health. The chemical composition of the major macronutrients and micronutrients will be examined. Additionally, the physiology behind proper digestion and absorption of consumed nutrients as well as their use in cellular energy metabolism will be studied. For the laboratory component of the course, the class will learn to comprehend nutrition and food labels, utilize nutrition tracking tools, as well as perform hands-on activities to explore the chemical makeup of food molecules. Current topics in nutrition will be integrated into the course material, such as evaluating the efficacy of dietary trends and gaining helpful strategies to eat healthier as a high school student. This course is highly recommended for students who are interested in increasing their knowledge base about basic nutrition in order to make more informed decisions about leading a healthy lifestyle.

Student learning outcomes:

After successful completion of this course, students will understand nutritional needs for optimal health, become informed consumers of nutritional information, and gain helpful strategies for incorporating nutritious eating habits as a component of a healthy lifestyle.

Topics:

Lectures will cover the fundamentals of nutrition, homeostasis, nutrition guidelines and recommendations, digestion, energy metabolism, carbohydrates, lipids, protein, vitamins, minerals, and water. In lab we will explore homeostasis, information literacy, food labels and tracking, enzymes and digestion, energy metabolism, energy balance, carbohydrates, lipids, proteins, micronutrients, and water.

Textbook:

Schiff, Wendy J. 2021. *Nutrition Essentials: A Personal Approach*, 3rd ed. McGraw-Hill: New York.

Please note that some aspects of this course may need to be changed during the semester, so this syllabus is subject to revision. If the syllabus is revised during the semester, the updated syllabus will be posted on Canvas. Please refer to Canvas for updated information.

Safety

Please familiarize yourself with lab safety protocols and perform procedures with care. Because we hold class in a science lab, no food, gum, or drinks can be brought into the classroom. Your work area should always be free of clutter and only have the necessary materials (pens/pencils, notebook, etc.). If there are glassware breakage or equipment problems, please notify the instructor immediately to ensure proper safety and equipment protocols are followed.

Assignments:

The assignments for the course are shown in the table below.

Assignment type	Points	Number	Total
Participation and conduct	30	1	30
Quiz	10	10	100
Homework	10	10	100
Lab write-up	20	13	200
Presentation	40	1	100
Examination	100	4	400
Inquiry and outreach project	70	1	70
Total			1000

Grading Scale:

100 – 93% = A	< 90 – 87% = B+	< 80 – 77% = C+	< 70% = D*
< 93 – 90% = A-	< 87 – 83% = B	< 77 – 70% = C	
	< 83 – 80% = B-		

Grades will be posted on Canvas and synced to Powerschool. If I am late posting grades, you can estimate your current grade in the course by adding all the points you have earned or anticipate earning from all assignments. There are 1000 points available in the course, so each point is worth 0.1%.

Please make an appointment to talk with me if you are concerned about your grade or uncertain about your standing in the course.

Participation and conduct:

I will assign a few points at the end of the semester to reflect your degree of participation in lab and lecture and your conduct. Good conduct entails adhering to safety guidelines, being polite to others, and not causing disruptions. This will be done on a holistic basis; I do not intend to count every time you raise your hand or don your safety glasses.

Quizzes:

I will give quizzes on Canvas or in class to help you practice applying the information we learn.

Homework assignments:

Most weeks, a homework assignment will be posted to Canvas and due the following week. The goals of homework are to review material that has been learned previously and/or to prepare for material that is to be covered in the coming week. Each homework assignment will be submitted on Canvas and worth about 10 points. Homework assignments will be graded for correctness and completeness.

Laboratory activities:

Lab activities will permit hands-on exploration of concepts learned in class. Most lab activities will be submitted individually by each student on Canvas on a due date set by the instructor. Some may be turned in on paper in class if the instructor decides that is appropriate for the exercise. Each lab assignment will be worth 15-25 points. During some labs students will work with lab partners. Please review the lab exercise and any relevant training materials before lab so that you know what you are doing before you begin. Please check your email and Canvas regularly for any updates.

Presentations:

To make sure I don't do all the talking in the course, we'll schedule some times for you to present course material. At the end of the semester, we will reserve a day or two for student presentations so you can dig a little deeper into a topic that interests you.

Examinations:

Although each exam is weighted equally, the last one is a comprehensive final exam. Some exam questions may include lab stations where you answer questions about specimens, foods, or lab equipment.

Inquiry and outreach project:

This semester you will undertake a project that involves first answering one or more research questions and then developing an informative media product (video, pamphlet, poster, or something else) to disseminate to the broader Academy community. The project will involve both individual and group work.

Attendance

Please arrive on time to class. The instructor is required to take attendance so that all students are accounted for. If you arrive late to class, someone might start checking to see where you may be. If you are late, you may need to remind the instructor to change the absence to tardy. This will disrupt our workflow and possibly the workflow of others, so please try to avoid being late.

If you miss lecture for any reason, you are responsible for obtaining any notes, announcements, reading material, or assignments from the instructor or a classmate. If an unavoidable conflict, emergency, or illness prevents you from attending class or completing an assignment on time, please inform the instructor as soon as possible (preferably beforehand). The Academy and not the instructor determines

whether an absence is excused or unexcused. No direct grade penalty is assessed for an absence. However, you will have a much greater chance of success if you are present as much as possible.

Indiana Academy Absence Policy

It is the policy of the Indiana Academy that any absence from class is unexcused, except for illness, death in the family, college or school-related activities, and extenuating circumstances. When a student is absent from a class, the instructor reports the student absence to the Faculty Attendance Coordinator in the Office of Academic Affairs. Unless the absence is excused by a school official, it is considered unexcused. The decision as to whether an absence is excused is not determined by the instructor. Four or more unexcused absences in any particular class a student takes will lead to academic and residential consequences to be determined by the Office of Academic Affairs and the Office of Residential Life that may include detention, residential groundings, parent/principal conference, among others.

Academic conduct

It is important to prepare for each class meeting by completing the reading and any assignments that are due. Assignments should be submitted on Canvas or in class, depending on the assignment. Although some activities such as labs may be completed in pairs or groups of students, each student is individually responsible for submitting assignments with original writing (not copied from your lab mate). You are encouraged to discuss answers to lab activities with other class members, but the wording should not be the same. Do not share word processing files with each other, but make sure each student has access to the raw data for analysis.

You are expected to conduct yourself according to the Indiana Academy Student Handbook (<https://academy.bsu.edu/handbook/>), especially the Code of Conduct and the section on Academic Integrity. On writing assignments, please be sure to use your own wording and cite all sources of information, whether from the Internet or otherwise. If you are not sure how to cite something, ask the instructor. Note that language copied verbatim from a book, website, another student's paper, or any other source is considered plagiarism unless it is in quotation marks and cited. Plagiarism is a form of academic dishonesty. Please do not plagiarize or cheat in any other way. An infraction may result in a 0 for the assignment. Also, the instructor is required to report any ethics violations to the Academic Integrity Board or (the Director of Academic Affairs and your parents).

Artificial intelligence (AI) technology

Technologies referred to as “artificial intelligence” (AI) are becoming increasingly salient in our lives, sometimes with more emphasis on artificial than on intelligence. The original Turing test (Turing, 1950) for artificial intelligence is to engage in dialogue with what we would now call a “chatbot”. If the discourse is indistinguishable from that of a human, then it is considered artificial intelligence. Modern large language models such as ChatGPT (OpenAI, 2022) exemplify this approach by stringing together words from human writing to sound intelligent (without always being intelligent).

These tools can be very useful, from simple spellchecks to generating computer code. As we adopt these technologies, however, it is important to verify that information obtained is correct and to avoid presenting as our own work that was produced by software or anyone else. We can avoid these pitfalls if we use the auto-generated content as a starting point but not as a finished product. Find the original

sources of information and cite those. ChatGPT has a reputation for making up references that don't exist, so don't rely on it.

References and resources on AI:

OpenAI. 2022. ChatGPT, Version 3.5. OpenAI, accessed 12 May 2024 at <https://chatgpt.com/>.

Turing, Alan M. 1950. Computing machinery and intelligence. *Mind* LIX(236):433-460, <https://doi.org/10.1093/mind/LIX.236.433>, accessed 12 May 2024 at <https://academic.oup.com/mind/article/LIX/236/433/986238?login=false>.

Classroom conduct

Please be considerate of other classmates. Keep any devices not used for classroom activities silenced or off. Use of electronic devices during class can be distracting to yourself and others and interfere with the learning process. Your phone should be put away if it's not being used for class. A new Indiana state law prohibits the use of phones in class by high school students except during an emergency or when being used for class activities with the instructor's permission. Laptops can be used in class for class activities, but repeated use for non-class activities may result in a loss of that privilege. A calculator (but not a phone) may be used for exams.

IA Wireless Device Policy:

Pursuant to Indiana Code 20-26-5-40.7, The Indiana Academy for Science, Mathematics and Humanities prohibits student use of wireless communication devices for non-instructional purposes in the classroom. As such, any and all portable wireless devices, that have the capability to provide voice, messaging, or other data communication between two or more parties, must only be used for academic purposes directly tied to the classroom activity or related educational task. Exceptions to this wireless device policy are eligible through academic accommodations, individualized education programs, or with instructor approval permitting the use of a wireless device for justification related to health, safety, and/or well-being. The improper use of a wireless device in an active classroom setting is subject to disciplinary action including but not limited to; a verbal warning, temporary seizure of said device by a school official, an unexcused absence for the class in question, written communication to parent/guardian, among other elevated consequences for repeated improper use.

Please treat each other with respect and refrain from annoying behavior. Do not interrupt another student or the instructor. If you are having difficulty getting a word in, you can raise your hand. Examples of improper conduct include having extended conversations, working on assignments for other courses, sleeping, etc. Serious and/or chronic problems may be cause for dismissal from the course.

Late work

If you are late submitting an assignment because you missed class, see the section above on attendance. If an absence is excused by the Academy, the instructor will make every reasonable effort to ensure you have the opportunity to make up any assignments associated with the absence. If you are late

submitting an assignment associated with an unexcused absence or for a reason unrelated to missing class, the instructor may grade the assignment as time allows.

If an exam is missed because of an excused absence, the instructor will make every reasonable effort to ensure you have the opportunity to make it up. If the absence is unexcused, a make-up exam may be allowed at the instructor's discretion. If a lab is missed, it may be difficult to arrange for a student to make it up due to supplies and logistical constraints. If the absence was excused, the instructor may need to substitute an alternate activity.

Library research

Through your association with Ball State University, you have access to an academic research library with many useful materials. This includes online access to many peer-reviewed scientific journals through bibliographic databases to which Ball State subscribes. To access these databases, go to <https://www.bsu.edu/library>, and scroll down to "Databases". The databases are listed in alphabetical order by the first letter. Two good ones to try are Academic Search Complete under "A" and JSTOR under "J". PubMed is good for topics in nutrition, microbiology, biomedicine, biotechnology, genetics, and cellular and molecular biology. When you click on one of these databases, you will be prompted to log into your Ball State account. You can search for articles on particular topics and then access the full text of many articles from the journal publishers' websites.

Also, if you are logged into <https://my.bsu.edu>, try searching on Google Scholar at <https://scholar.google.com>. You should see "Find it at Ball State" for references available through university subscriptions.

Student accommodations and special circumstances

If you have an IEP or a 504 that provides accommodations, have emergency medical information to share, or need special arrangements in case the building needs to be evacuated, please make an appointment with the instructor as soon as possible.

If you are struggling with study habits, stress, and/or personal issues, I encourage you to discuss the situation with your SLC and/or contact the Guidance Office for help in addressing these issues so that you can thrive at the Academy. Many resources are available for students, and important contact information is listed below:

For guidance: Meg Wright (mewright@bsu.edu), phone:765-285-7407; office: WA183.

To find a tutor: Meg Wright (mewright@bsu.edu), phone:765-285-7407; office: WA183.

For mental health: Dr. Mindy Wallpe (mcwallpe@bsu.edu), phone: 765-285-5483; office: WA 160-C.

Course evaluations

At the end of the semester, each student will have the opportunity to evaluate the course, instructor, and materials. The instructor will not see the results of the evaluations until after grades have been submitted. Your frank and constructive responses will help improve the course for future semesters.

INDIANA ACADEMY INCLUSIVE EXCELLENCE STATEMENT:

Ball State University aspires to be a university that attracts and retains a diverse faculty, staff and student body. We are committed to ensuring that all members of the community are welcome through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse as expressed in our Beneficence Pledge. As a reflection of Ball State's commitment to respect, civil discourse, and the Beneficence Pledge, Inclusive Excellence at the Indiana Academy emerges as one of the priorities of our living and learning community. We strive to exist together respectfully and compassionately, creating an environment where every member can thrive. Unfortunately, there might be occasions when something occurs that disrupts our progress toward meeting these objectives. In this case, we encourage any member of the Academy community to file a Campus Climate Report (CCR)

https://bsu.qualtrics.com/jfe/form/SV_6mbRbL5acAntUTI. All reports will be taken seriously, and appropriate responses will be carried out by Academy administration.

Schedule (subject to revision as needed)

12 August	Introduction to class, safety (school and lab)	Read syllabus
13 August	Lab safety, Starch-testing lab	Complete lab safety worksheet
14 August	Homeostasis	Homeostasis activity
16 August	Introduction to nutrition and nutrients	Read Unit 1
19 August	Nutrition information	Read Unit 2
20 August	Homeostasis lab	Complete homeostasis laboratory
21 August	Nutrition guidelines and recommendations	Read Modules 3.1-3.2
23 August	Food labeling	Read Module 3.3, labeling activity
26 August	Supplements, making wise choices	Read Modules 3.2 and 3.4
27 August	Information literacy lab	Complete information literacy lab
28 August	What is food?	Read Unit 4, food homework
30 August	The biological hierarchy of organization	Read Module 4.1
4 September	Principles of digestion	Read Unit 4, pp 77-86, 95-97
6 September	Details of digestion	Read Unit 4, pp 77-86, 95-97
9 September	Digestive system disorders	Read Module 4.3
10 September	Food labels lab	Complete food labels lab
11 September	Plan Inquiry & Outreach projects	Proposal
13 September	Review for exam 1 over Units 1-4	Review Units 1-4
16 September	Exam 1 over Units 1-4	Take exam 1
17 September	Begin food tracking lab	Start food tracking
18 September	Carbohydrates as fuel, sweeteners	Read Module 5.1
20 September	Blood glucose regulation, glucose transporters	Read Module 5.2, carb homework
23 September	Carbohydrate recommendations	Review Modules 5.1d-5.2b
24 September	Complete food tracking lab	Analyze food tracking data
25 September	Meal timing and justice	Read Danziger et al. Paper
27 September	Energy metabolism, carbohydrates, and health	Read Appendix C, Module 5.3
30 September	Lipids and lipid dietary recommendations	Read Module 6.1
1 October	Carbohydrate lab	Complete carbohydrate lab
2 October	Lipid metabolism and storage	Read Module 6.2
4 October	Parent-teacher Conferences (earlier or by Zoom for Winslow)	
9 October	Cardiovascular disease	Read Module 6.3, lipid homework

10 October	Tuesday labs on Thursday: Lipid lab	Complete lipid lab
11 October	Energy metabolism lab	Complete energy metabolism lab
14 October	Complete Inquiry part of Inquiry & Outreach	Inquiry & Outreach project
15 October	Proteins, protein digestion	Read Modules 7.1-7.2
16 October	Proteins in foods, vegetarianism and veganism	Read Modules 7.3-7.4
18 October	Proteins & health, food budgeting	Read Module 7.5
21 October	Enzyme activity	
22 October	Enzyme lab	Complete enzyme lab
23 October	Review for exam 2 over Units 5-7	Review Units 5-7
25 October	Exam 2 over Units 5-7	Take exam 2
28 October	Vitamins	Read Module 8.1
29 October	Digestion lab	Complete digestion lab
30 October	Fat soluble vitamins	Read Module 8.2
1 November	B vitamins (water soluble)	Read Module 8.3a-8.3d
4 November	Other water soluble vitamins (biotin, choline, C)	Read Module 8.3d-8.3e
5 November	Energy balance lab	Complete energy balance lab
6 November	Vitamins and cancer	Read Module 8.4, vitamin activity
8 November	Complete Outreach part of Inquiry & Outreach	Inquiry & Outreach project
11 November	Minerals	Read Modules 9.1-9.2
12 November	Lab on melting points of oils	Complete oil melting point lab
13 November	Inquiry & Outreach project due	Inquiry & Outreach project
15 November	Water	Read Modules 9.3-9.4
18 November	Review for exam 3 over Units 8-9	Review Units 8-9, water homework
19 November	Protein lab	Complete protein lab
20 November	Exam 3 over Units 8-9	Take exam 3
22 November	Obesity, weight management	Read Module 10.1-10.3b
2 December	Disordered eating and eating disorders	Read Modules 10.3c-10.4
3 December	Water lab	Complete water lab
4 December	Activity and health	Read Module 10.5, activity activity
6 December	Nutrition for your life	Read Module 11.1
9 December	Nutrition for your world	Read Modules 11.2-11.3
10 December	Smoothie lab	Make smoothies, recipe book
11 December	Student presentations	Present findings
13 December	Review for final exam	Review Units 1-11
16-19 December	Final exam week	Take comprehensive final exam