Nutritional Biochemistry

Chem 494

3 credits

Instructor: Kriya Dunlap, 474-2766, kldunlap@alaska.edu

Office Hours: Department of Chemistry and Biochemistry
West Ridge Research Building (WRRB), 230
Tuesday 4:00 – 5:00 pm

Lecture: WRRB 009

Reading Material: Reading material will be provided by the instructor a made available through blackboard and on course website. Reading material will be a mix of manuscripts, IACUC and IRB applications, proposals, protocols, and special topic reports and interest pieces.

Text (optional): Martha H. Stipanuk
Biochemical and Physiological Aspects of Human Nutrition, 3rd Edition
Saunders
Publishing
ISBN:
1437709591
Published 2012
Supplementary readings: Library, web, manuscripts etc.

Course:

This 3-credit course focuses on diet and exercise relevant to disease and health outcomes in Alaska. Topics discussed will include components in Alaska foods, such as phytonutrients and omega-3 fatty acids and the health disparities that are affected by these compounds, such as diabetes, cardiovascular disease, inflammation and metabolic syndrome. We will tackle these issues by studying their biochemical foundation and address their role in disease. Proposal writing, research compliance, research techniques, and experimental design and execution will be central topics. The course is designed for the application of practical biochemical knowledge towards a current place-based biomedical issues. We will also explore biomedical research models here at UAF.

Proficiencies: General Biochemistry.

Course Goals:

- Connect chemical and physical properties of nutrients with their cellular functions.
- Gain an understanding of the role of diet and exercise in mitigating disease.
- Identify molecular components in Alaska's food supply and their role in disease prevention.
- Study research tools and biomedical research models at UAF
- Write a proposal for submission to BLaST or INBRE.
- Discuss current IACUC/IRB and address compliance issues pertaining to their projects.

Learning Outcomes:

- Students will be able to identify molecular components in Alaska's food supply and their role in disease prevention.
- Students will learn how the chemical and physical properties of nutrients affect cellular functions.
- Students will acquire skills to constructively critique classmates' proposals throughout the writing process.
- Students gain skills in proposal writing.
- Students will learn about responsible conduct of research topics (IACUC and IRB).

Instructional Methods:
The biochemical foundation of each topic will be presented in a short lecture and the mid-term and final will cover this material. Reading material will be assigned weekly and group discussion will be an important component of this class. Most reading material will include special interest pieces, examples of proposals, examples of protocols, IACUC/IRBs and relevant peer-reviewed manuscripts.

We will take time every week in class to work on writing a research proposal that is intended for submission for one of the graduate or undergraduate awards available at UAF, such as BLaST, URSA, or INBRE. Students will decide early in the semester where they intend to focus their efforts and will work weekly to review the proposals of others while progressively building your own proposal. Students will be expected to complete literature review on their own time but share key findings from their literature search with the class in an effort to develop a strong hypothesis. We will work on developing strong specific aims and address specific needs of each proposal, such as IACUC or IRBs.

Blackboard will used to post grades and for other announcements. The course website located at https://chem494.community.uaf.edu will be used as a central communication site and will be where all lecture notes and reading material will be found. Other resource sharing may be through dropbox and googledocs.

Evaluation:

Attendance/Readings/Discussion/Participation	100 pts
Specific Aims	50 pts
Peer Review	50 pts
Research Plan	50 pts
Peer Review	50 pts
Approach	50 pts
Peer Review	50 pts
Full Proposal	100 pts
Midterm	100 pts
Final	100 pts
Total	**700 pts**

Grading: Totals will be translated into a letter grade. Total point percentages of 90, 80, 70 and 60 correspond to the lower cutoff boundaries for the grades of A, B, C and D respectively. Percentages less than 60 constitute a failing grade ("F"). Evaluation will be provided with grade break down and grades will be posted in blackboard within a week of completion.

Course Structure:

Attendance/Readings/Discussion/Participation:

Regular student attendance is expected to ensure consistent discussion. Active student participation is expected and is necessary for proposal development.

Specific Aims & Peer Review:

Some believe the Specific Aim(s) section of a proposal is the most important part; often a determining factor in whether your proposal makes it to the next stage of review. A great deal of time will be spent on developing this section. It will also help with writing the rest of the proposal. You will be graded not only your work but also on your review and critique of other proposals.

Research Plan & Peer Review:

The section involves the Significance and Innovations sections. This is the meat of your proposal. This consists of the bulk of your literature review and any preliminary data you have. Again, you will be graded not only your work but also on your review and critique of other proposals.

Approach & Peer Review:

The Approach section is what manuscripts call Material & Methods. This is where you will clearly outline and describe how you will perform the research and what strategies you will take if your proposed methods

do not work: alternative approaches. Again, you will be graded not only your work but also on your review and critique of other proposals.

Final Proposal:

A final proposal will include all the components, including a NIH biosketch, timetable and the major components of your proposal.

Midterm & Final:

There will be two exams in this course, a midterm and a final. Both equal to 100 points. You will be tested on lecture notes, reading material and guest lectures.

Ethical Considerations:

Any student caught cheating will be assigned a course grade of "F". The students academic advisor will be notified of this failing grade and the student will not be allowed to drop the course.

Student Code of Conduct:

As a UAF student, you are subject to the Student Code of Conduct. The university assumes that the integrity of each student and of the student body as a whole will be upheld. Honesty is a primary responsibility of you and every other UAF student. It is your responsibility to help maintain the integrity of the student community. More detailed information about UAF's Student Code of Conduct can be found at http://www.uaf.edu/catalog/current/academics/regs3.html; it goes as follows:

1) Students will not collaborate on any quizzes, in-class exams, or take-home exams that will contribute to their grade in a course, unless permission is granted by the instructor of the course. Only those materials permitted by the instructor may be used to assist in quizzes and examinations.
2) Students will not represent the work of others as their own. A student will attribute the source of information not original with himself or herself (direct quotes or paraphrases) in compositions, theses and other reports.
3) No work submitted for one course may be submitted for credit in another course without the explicit approval of both instructors. Violations of the Honor Code will result in a failing grade for the assignment and, ordinarily, for the course in which the violation occurred. Moreover, violation of the Honor Code may result in suspension or expulsion.

Support Services:

Support services will be provided by the University of Alaska Library system, online resources and the instructor. Additional services are available through Student Support Services (http://www.uaf.edu/sssp/) at UAF.

Disabilities Services:
We will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide accommodations for students with disabilities. If you have a disability and require special assistance, please contact the instructor as soon as possible. Students with disabilities must provide a written statement indicating any special requirements that will be necessary as early in the semester as possible (preferably within the first week).