

# CANCER BIOLOGY (CAB)

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**CAB 701. CAB Student Seminar. 1 Credit Hour.**

This course (required of 2nd and 3rd year students) offers instruction on the fundamental elements of scientific speaking. The ability to communicate effectively is essential for scientists. All CAB students are required to present their research each year as a 25 min (2nd year students) or 55 min seminar (3rd year and above). Students who are 4th year+ give seminars but are not enrolled.

**Components:** LEC.

**Grading:** SUS.

**Typically Offered:** Fall.

**CAB 705. Translational to Clinical Research. 0-1 Credit Hours.**

Beginning in the fall of their second year, students participate in "Translational to Clinical Research", which spans years two through four of the program. Students are introduced to clinical trials, pathology reviews, tumor boards, the protocol review process and have an opportunity to interact with physicians who care for cancer patients and conduct clinical trials. The student's Physician Mentor advises and directs the student in the most relevant activities to attend and discusses the student's experience with them every semester. Students are required to attend 2 meetings each semester for a total of 12 meetings in addition to discussion with their Physician Mentors. A short written report of each review meeting of the student's experience is required. Didactic seminars are not accepted.

**Components:** DIS.

**Grading:** SUS.

**Typically Offered:** Fall.

**CAB 710. Cancer Biochemistry and Molecular Biology. 3 Credit Hours.**

This is an entry-level lecture course designed to introduce students to the major concepts and principles of cell growth deregulation in cancer with a major emphasis on molecular mechanisms. Topics include: oncogenes, tumor suppressors, mechanisms of uncontrolled cell growth, receptors and intracellular signal transduction pathways.

**Components:** LEC.

**Grading:** GRD.

**Typically Offered:** Spring.

**CAB 712. Special Topics in Cancer Research - Viral Oncology and Tumor Immunology Module. 2 Credit Hours.**

This module emphasized state of the art knowledge of each discipline, student participation in a problem based learning context. Topics include viral carcinogenesis and epidemiology, Hepatitis, Herpes, Epstein Barr and Human Papilloma Viruses, Kaposi's Sarcoma, viral induced lymphomas, viral oncolysis, and mechanisms of anti-tumor immunity.

**Components:** LEC.

**Grading:** GRD.

**Typically Offered:** Spring.

**CAB 713. Special Topics in Cancer Research - Molecular Cancer Therapeutics Module. 2 Credit Hours.**

This module explores the signal transduction pathways critical for cancer cell proliferation and survival that may provide new therapeutic targets, approaches for identification and validation of molecular targets within these pathways. Students are introduced to the strategies used in the discovery and design of biological and drug based therapies, and the implementation of clinical trials.

**Components:** LEC.

**Grading:** SUS.

**Typically Offered:** Spring.

**CAB 714. Integrated Cancer Epidemiology and Prevention and Biobehavioral Oncology. 2 Credit Hours.**

2 credits, Spring I (7-week module) (Offered alternate years 2018, 2020, 2022) Tuesday/Thursday 3:30 – 5:00 p.m. The overall philosophy of this module is to introduce students to the basic principles of biobehavioral oncology and integrated cancer epidemiology and cancer prevention. The course will explore cancer epidemiology approaches used to identify the molecular and genetic mechanisms of cancer risk and progression and how these are used to develop predictive models in treatment response. It is necessary to integrate modern and rapidly evolving multi-omic technologies to study, develop predictive models of disease etiology, treatment and prevention. Lectures will take into context, feasibility, quality control and practical limitations of integration of data types. Methods for identifying social, environmental, and biological reasons for cancer disparities among different populations will also be covered. Sections on biobehavioral oncology include: health behavior change processes in persons at risk for and diagnosed with cancer; methods to improve adaptation to cancer diagnosis and treatment, psychosocial intervention research techniques and bio-behavioral processes explaining their effects on health and quality of life (QOL), translation of behavioral and psychosocial intervention to the community, symptom/treatment side effects management approaches, predictors of late effects of cancer treatment and development of preventative interventions.

**Components:** LEC.

**Grading:** SUS.

**Typically Offered:** Spring.

**CAB 715. Special Topics in Cancer Research - Breast and Genitourinary Cancers Module. 2 Credit Hours.**

This module highlights key aspects of the cellular and molecular mechanisms of breast, prostate, renal and bladder cancers as well as providing an overview of cancer detection, diagnosis, and therapy. Emerging research opportunities are identified. Topics include estrogen receptor and androgen receptor signaling, cancer progression, endocrine therapies and resistance. Key signaling pathways and the biology of metastasis will be discussed.

**Components:** LEC.

**Grading:** GRD.

**Typically Offered:** Spring.

**CAB 716. Special Topics in Cancer Research: Design and Management of Cancer Clinical Trials. 1-3 Credit Hours.**

Modeled after the AACR-ASCO Methods in Clinical Cancer Research Workshop, this course includes 20 hours of lectures and discussion over five weeks. Participants complete homework assignments leading to the development of a clinical trial protocol ready for IRB submission by the end of the series. Lectures teach basic research concepts and principles that underlie the design and actual day-to-day conduct of clinical trials, using examples primarily from cancer clinical trials.

**Components:** DIS.

**Grading:** SUS.

**Typically Offered:** Fall.

**CAB 720. Dialogues with Cancer Clinicians. 1 Credit Hour.**

This module features physician mentors of the Cancer Biology Graduate Program who will discuss clinical aspects of cancer treatment with an emphasis on continuity of care of newly diagnosed patients between disciplines and will articulate unmet clinical needs and research. Mentors will provide clinical perspectives on their areas of specialization as it relates to patient care including diagnosis, staging, therapy, and outcomes.

**Components:** LEC.

**Grading:** SUS.

**Typically Offered:** Spring.

**CAB 731. Special Work. 1-3 Credit Hours.**

Independent, faculty assigned study.

**Components:** IND.

**Grading:** SUS.

**Typically Offered:** Fall, Spring, & Summer.

**CAB 750. Logic and Reasoning in Translational Cancer Research: Bench to Bedside Part 1. 1-3 Credit Hours.**

An important facet of the Cancer Biology Ph.D. Program is the training of students in the interrelationships between basic research and clinical medicine, i.e., translational research. The goal of this advanced course is to expose students to the scientific reasoning and logic underlying problem solving in clinical cancer research. This course is designed to help students integrate information and develop the thought processes necessary to critically evaluate information in the literature and experimental approaches, conceptualize problems in the field and identify areas for scientific exploration. Students learn how the knowledge obtained from basic research laboratories is applied to clinical problems including prevention, diagnosis, prognosis, and therapeutic treatment of cancer. Specific examples of translational research, i.e., laboratory to clinic are emphasized. Students also learn the key role of clinical observation in identifying basic research problems.

**Components:** LEC.

**Grading:** SUS.

**Typically Offered:** Fall Even Years.

**CAB 810. Master's Thesis. 1-6 Credit Hours.**

The student working on his/her Master's thesis enrolls for credit, in most departments not to exceed six, as determined by his/her advisor.

**Components:** THI.

**Grading:** SUS.

**Typically Offered:** Fall, Spring, & Summer.

**CAB 820. Master's Research in Residence. 1 Credit Hour.**

Students must be registered in the semester they plan to defend. Used to establish research in residence for the Master's degree, after the student has been enrolled for the permissible cumulative total in appropriate Master's research. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Components:** THI.

**Grading:** SUS.

**Typically Offered:** Fall, Spring, & Summer.

**CAB 830. Dissertation Research - Pre Candidacy. 2 Credit Hours.**

Required of all candidates for the Ph.D. The student will enroll for credits as determined by the Office of Graduate Studies but not less than a total of 24. Not more than six in the summer. If a student has a) passed qualifying exam(s) and (b) is engaged in an assistantship, he/she may still take the maximum allowable credits.

**Components:** THI.

**Grading:** SUS.

**Typically Offered:** Fall, Spring, & Summer.

**CAB 840. Doctoral Dissertation- Post Candidacy. 1-12 Credit Hours.**

Required for all Ph.D. candidates. Grade will remain IP until student dissertation is accepted by Graduate School.

**Components:** THI.

**Grading:** SUS.

**Typically Offered:** Fall, Spring, & Summer.

**CAB 850. Research in Residence. 1 Credit Hour.**

Used to establish research in residence for the Ph.D., after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Credit is not granted. May be regarded as full-time residence as determined by the Dean of the Graduate School.

**Components:** THI.

**Grading:** SUS.

**Typically Offered:** Fall, Spring, & Summer.