

Tumor Biology (TBIO)

TBIO 6508 Cellular Molecular Aspects 3-4 Credits

Designed to provide students with an integrative overview of mechanisms of growth control and malignant transformation by physical, chemical, and viral mechanisms. Introduction to growth factors, oncogenes, and suppressor genes. Includes an introduction to means of reverting or blocking malignant behavior with a particular emphasis on biochemical and molecular mechanisms.

Level: Graduate, Undergraduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6510 Biochem for Cancer Research 4 Credits

In this course, students will be introduced to basic biochemical pathways involved in normal human tissue and in carcinogenesis. Furthermore, students will be encouraged to think about how molecular interventions of biochemical pathways could be applied to solve current problems in cancer research.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6511 Lec:Clin Translational Oncolg 3 Credits

Each segment of this 3 part series will consist of one 2 hour tutorial session, directed readings, and one 2 hour journal club seminar meeting hosted by LCCC Clinical Oncologists. The topics covered will include cancer screening, pathology and management, inherited susceptibility to cancer, cancer chemotherapy and radiation, drug design, and new techniques in screening and therapy. This 3-credit course is comprised of 1-credit modular units: 1) Breast, 2) Melanoma, and 3) Neural Tumors.

Level: Graduate

Prerequisites: (TBIO 582 or TBIO 6582)

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6513 Clinical Conf On Breast Cancer 1-2 Credits

Course Director: Dr. Filipa Lynce Time: 5:00PM – 6:00PM Date:

Tuesdays Location: Marietta Conference Room in Lombardi Cancer Center First Floor The Interdisciplinary Program in Tumor Biology provides doctoral and masters students with training for a career in cancer biology research. Integral to this program is exposure to clinical medicine through TBIO 513. This course provides case based instruction on the management principals of breast cancer, rooted in the treatment modalities of surgery, radiation, and systemic therapy. Cases are presented by a multidisciplinary team of clinicians from Georgetown University Hospital and the Lombardi Cancer Center who practice breast oncology including surgeons, pathologists, radiologists and medical oncologists, radiation oncologist. Through weekly meetings, actual select cases are discussed that highlight the clinical strategies used in the management of breast cancer. The rationale for treatments are evidence based and students will learn of the establish research studies that support current practices as well as ongoing trials and emerging data. Students will have access to the clinicians to address or clarify topics that may arise in the basic science environment. This course will precipitate research ideas, provide opportunities for collaboration with the clinical staff and support the participant's research and academic scholarship. Assignments & Expectations of Students Evaluation will be based on attendance. Meetings Tuesday 5-6:00pm.

Level: Graduate

Grading: Pass/Fail Default

Course registration restrictions:

Enrollment is limited to students with a major in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6514 Clinical Conf On Breast Cancer 1 Credit

This course promotes an appreciation for the biology of breast cancer as it occurs in individual women, allowing students to better formulate research programs addressing issues of clinical significance.

Level: Graduate

Grading: Pass/Fail Default

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6520 Cancer Prevent/Control/Epidem 3 Credits

Cancer epidemiology, prevention and control relies on the conduct of basic science research and applied research in the behavioral, social, and population sciences to create or enhance interventions that, independently or in combination with biomedical approaches, reduce cancer risk, incidence, morbidity and mortality, and improve quality of life. The objectives of this course are to equip students with the understanding of cancer problems from cell to society and to provide them with the evidence of the need of cross-disciplinary collaboration between biomedical and behavioral sciences. The overall goal of the course is to stimulate students to apply broad perspectives to their areas of research interest that ultimately leads to a successful research career in cancer prevention and control.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6522 Epigenetics:Mech Env Implctns 3 Credits

This is a combined lecture/literature review/problem-based discussion course designed for upper level undergraduates and graduate students in Human Science, Molecular/Cell Biology, Tumor Biology, Pharmacology, and Neuroscience. Moreover, a broad range of topics will be covered through discussing landmark papers and emerging concepts in the field of epigenetic research, including environmental health, cancer, and neurological disorder. Following an introductory lecture on each topic, students will discuss in detail recent papers and background material concerning each individual topic.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6523 Cancer Epigenetics 3 Credits

The Cancer Epigenetics course covers epigenetic mechanisms in human diseases, focusing on cancers. This is a combined lecture/literature review/discussion course designed for graduate students in Molecular/Cell Biology, Biochemistry, Physiology, Tumor Biology, Pharmacology, and Neuroscience. The course has five primary objectives: (1) understanding the epigenetic regulation in normal & cancer cells; (2) deciphering epigenetic pathways and molecular targets in malignant transformation; (3) learning the impact of epigenetic alterations associated with cancers; (4) reviewing recent advances in epigenetic issues/phenomena by highlighting the growing importance of epigenetic therapeutics in cancers; (5) learning the scientific approaches/methods employed to define epigenetic-mediated cancer drivers and their therapeutic potential. Moreover, a broad range of topics will be covered through discussing landmark papers and emerging concepts in the field of epigenetic research. In the class, students will discuss background materials, including papers related to individual topics.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6524 Epigenetics II 3 Credits

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6525 Cancer Genetics 3 Credits

This course introduces the fundamentals of the molecular genetics and molecular cytogenetics of cancer. In addition, it covers diagnostic, clinical, and population-based aspects of this rapidly advancing field.

Level: Graduate, Undergraduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Biochemistry Molecular Biol, Biochemistry Molecular Biol, Biochemistry Molecular Biol, Biotechnology, Biotechnology, Biotechnology, Microbiology Immunology, Microbiology Immunology, Microbiology Immunology, Microbiology Immunology, Physiology and Biophys (SMP), Physiology and Biophys (SMP), Physiology and Biophys (SMP), Physiology and Biophys (SMP), Physiology and Biophysics, Physiology and Biophysics, Physiology and Biophysics, Systems Medicine, Systems Medicine, Systems Medicine, Systems Medicine, Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6528 CORE METHODS IN MOLECULAR BIO 3 Credits

Introduction to core concepts of Molecular Biology. Detailed description of methods used for analysis, purification, quantitation of nucleic acids, and proteins.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6530 Systems Biology Bioinformati 3 Credits

An introduction to bioinformatics in systems biology, covering microarray data analysis, proteomic/metabolomic informatics, and regulatory network and pathway analysis.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6532 Prin/Prac of Behavioral Scienc 2 Credits

This course provides an understanding of the principles and practices related to cancer prevention and control, highlighting the application of social, psychological, behavioral, and translational research across the cancer control continuum, from cancer diagnosis to survivorship. We will examine strategies to help control the impact of cancer from the individual to population levels, with innovative examples from clinically-applied and research-tested approaches in the fields of tobacco control, diet and physical activity promotion, cancer screening and management, and survivorship education and health outcomes.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6536 Cancer Pharmacology 4 Credits

An overview of fundamentals of pharmacology as applied to cancer therapy. Mechanisms of action and resistance to chemotherapeutic, antihormonal, biological response modifiers, and new experimental drugs will be emphasized. TBIO 536 is a full semester course (4 credits).

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6543 Clinical Survey of Human Cance 1-2 Credits

This course features a broad site by site survey of human cancer. The perspective is primarily from the points of view of the medical oncologist and pathologist, with an emphasis on providing an integrated view of each principal cancer covering the following: natural history, biology, and treatment.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6546 Resources for Cancer Research

This course provides an introduction to the Shared Resources of the Lombardi Cancer Center. Emphasis will be on the practical aspects of utilization.

Level: Graduate

Grading: Pass/Fail Default

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6558 Contemp Iss in Genetics/Societ 3 Credits

This course provides a framework for understanding fundamentals of human medical genetics and the concomitant ethical and social issues that arise, as well as the practical implications for health and well-being.

Level: Graduate, Medicine

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6560 Animal Models 2 Credits

Animal models are an invaluable tool for cancer research and the goal of TBIO 560 is to introduce graduate students to the wide variety of models available, to the factors that inform the choice of an appropriate model for the research planned, and to provide basic training in the ethical, legal, and technical aspects of their use. Carcinogen induced tumor models, immune compromised mouse / xenograft systems and the use of animals in ADME testing are discussed in depth and a major focus of the course is the design and use of transgenic and induced mutant mouse models, particularly systems that allow temporal and special control of gene expression or genetic modification. Special emphasis is given to the use of various small animal imaging modalities such as PET, CT, SPECT, Ultrasound, MRI, Bioluminescence, Fluorescence and their application in the serial analysis of live animals. The need for the use of appropriate statistical tools in the planning and analysis of animal studies is also stressed throughout the course. Students are evaluated by a final paper in which, having been provided with mock preliminary data, they are expected to explain, justify and design animal experiments to answer focused research questions, described in the format of the final aim of an R01 grant.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6562 Surv Skills Ethics for Scien 2 Credits

This course will allow the student to develop an understanding of the skills and ethical questions important for a successful and satisfying career in science.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Neuroscience, Neuroscience, Neuroscience, Neuroscience, Pharmacology, Pharmacology, Pharmacology, Pharmacology, Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6565 Translational Onc Lung Cancer 1 Credit

This is a graduate-level course that introduces students to tenets of Clinical Oncology. Each unit will have a presentation on the Pathology of Cancer, Patient Treatments, and current research on treatment methods and biomarker development. Cancer prevention strategies and cancer control research will be presented for those cancers in which these studies are critical. APPROACH Students will be provided with directed reading lists and pertinent videos with ample time for review before the class meetings. Online discussions will assist the students in formulating questions and comments for the lectures. Students will be assessed by formal examination of a short answer type. Online quizzes may be administered in advance of class to assure that the students are knowledgeable about the subject matter. When fully prepared, students will engage with Pathologists, Psychologists, Researchers, and Clinical Oncologists in question and answer sessions.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a program in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6566 Translat Onc- Neuro-oncology 1 Credit

Clinically based course wherein students are provided directed reading on current literature encompassing brain tumor pathology, tumor biology, neuro-genetics, survivorship, and targeted therapy. Discussions with clinical faculty, eg. Oncologists, Pathologist, Radiation Medicine professionals and researchers based upon the assigned topics assist the students in better understanding the status of Brain Tumor Medicine.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a program in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6567 Clin/Transltn Onclogy-Neural 1 Credit

Lectures in Clinical & Translational Oncology - Module 3: Neural Tumors 1-credit course offered as part of the 3-credit course, TBIO-511 (Lectures in Clinical & Translational Oncology). Students should take either TBIO-567 or TBIO-511, but not both.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6568 Minrty Hlth Hlth Disparities 2 Credits

Cancer health disparities represent a major public health problem in the United States. This course addresses the biological basis for the observed unequal burdens of cancer across racial/ethnic populations. The impact of genetic/genomic/epigenetic variability between groups that may affect cancer susceptibility and/or response to therapy which is vital to reducing the cancer gaps will be explored. The course will also explore evidence-based mechanisms that are designed to increase our understanding of biological factors and mechanisms that play a role in cancer health disparities.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6569 Pancreatic Other GI Cancers 1 Credit

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6572 Pathologic Basis of Cancer 2 Credits

A combination of lecture and lab, this course provides a strong background in pathology as related to cancer. The course consists of general introductory pathology lectures, followed by the pathologic basis of specific cancers, including colon, breast, prostate, cervical and endometrial, and hemapoietic.

Level: Graduate, Undergraduate

Prerequisites: (TBIO 582 or TBIO 6582)

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Biochemistry Molecular Biol, Biochemistry Molecular Biol, Biochemistry Molecular Biol, Biochemistry Molecular Biol, Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6581 Top:Molec Epidem of Cancer Ris 1 Credit

This course introduces students to the concept of carcinogenesis process (chemical, viral, and physical) with a focus on the causes, distribution and prevention of cancer in populations. The course emphasizes the roles of DNA damage/repair, individual genetic differences to environmental exposures in cancer risk. Students will learn how the current knowledge is used to develop molecular and genetic biomarkers that could be applied to assess cancer risk and identify potential risk and protective factors.

Level: Graduate, Undergraduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6582 Intro to Cancers to Diseases

The course will focus on the latest developments in the field of cancer risk assessment and explore how interindividual variation contributes to cancer risk.

Level: Graduate

Grading: Pass/Fail Default

Course registration restrictions:

Enrollment is limited to students with a program in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6583 Intro to Cancer as a Disease 1 Credit

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a program in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6584 Intro to Tumor Biology 1 Credit

The discipline of Tumor Biology (or cancer biology) occupies the intersection between multiple other fields including biochemistry, physiology, cell biology, pharmacology, and pathology, since at its essence it is the study of how processes within the body, whether normal or perturbed in some way, are involved in carcinogenesis, tumor progression, and the response to anti-cancer therapy. The goal of this course is to provide an overview of the field of Tumor Biology through a series of short informal presentations by Tumor Biology Program faculty describing their research interests, how their work relates to the field as a whole, and the research projects currently ongoing in their labs. The course usually starts in the middle of October. Each session includes two to three presentations. The sessions are informal and student participation in discussions is expected. Grading is based on attendance and class participation.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6585 Transcriptomics: Microarray An 1 Credit

An introduction to microarray experimental and data analysis. Students should take either TBIO 585 or TBIO 530 but not both.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6586 Proteomics: Mass Spectrometry 1 Credit

An introduction to mass spectrometry data analysis and proteomic biomarker discovery. Students should take either TBIO 586 or TBIO 530 but not both.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6587 Systems Biology: Pathway Net 1 Credit

An introduction to the metabolomics, interactomics, regulatory network and pathway analysis, and omics data integrating and mining. Students should take either TBIO 587 or TBIO 530 but not both.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6588 Preparing A Scientific Paper 2 Credits

The course covers the process of generating a manuscript for submission to a scientific journal. Starting with raw data, the process includes generating figures, legends for figures, results, discussion, methods, abstract, and introductory sections.

Level: Graduate, Undergraduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6591 Signal Trans Journal Club 1 Credit

Recent papers in the broad area of signal transduction as it pertains to areas such as growth factor signaling, angiogenesis, and transcription control mechanisms will be presented. Each registered student presents a paper in at least one session.

Level: Graduate, Undergraduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 6592 Signal Trans Journal Club 1 Credit

Recent papers in the broad area of signal transduction as it pertains to areas such as growth factor signaling, angiogenesis, and transcription control mechanisms will be presented.

Level: Graduate, Undergraduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 6599 Practical Data Anlyns Exp Des 2 Credits

This course designed to be taken by PhD students conducting research in the second year in the program. They should be generating data from their own experiments and are planning on pre-doctoral grant submissions.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 7030 Current Topics:Cancer Res

Student presentations of current articles in cancer research literature coordinated with a weekly outside speaker seminar series. All areas of Basic, Clinical, and Cancer Prevention and Control research are covered. Grading is based on attendance and class participation.

Level: Graduate, Undergraduate

Grading: Pass/Fail Default

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 7040 Current Topics:Cancer Res

Student presentations of current articles in cancer research literature coordinated with a weekly outside speaker seminar series. All areas of Basic, Clinical, and Cancer Prevention and Control research are covered. Grading is based on attendance and class participation.

Level: Graduate, Undergraduate

Grading: Pass/Fail Default

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 7050 Cancer Research Techniques 3 Credits

Laboratory Research Project required for TBIO MS Students. Part 1 of 2.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 7060 Cancer Res Techniques 3 Credits

Laboratory Research Project required for TBIO MS Students. Part 2 of 2.

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to students with a major in Tumor Biology, Tumor Biology, Tumor Biology or Tumor Biology.

Enrollment is limited to Graduate level students.

TBIO 7110 Tumor Biology Student Sem

Student seminar series of presentations coordinated with their laboratory rotation research projects, and with an ongoing series of weekly research presentations by all Lombardi Cancer Center members. Grading is based on attendance and class participation.

Level: Graduate

Grading: Pass/Fail Default

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 7120 Tumor Biology Student Sem

Student seminar series of presentations coordinated with their laboratory rotation research projects, and with an ongoing series of weekly research presentations by all Lombardi Cancer Center members. Grading is based on attendance and class participation.

Level: Graduate, Undergraduate

Grading: Pass/Fail Default

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 9985 TBIO Lab Rotation Summer

Level: Graduate

Grading: Pass/Fail Default

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 9986 TBIO Lab Rotation Fall

Level: Graduate

Grading: Pass/Fail Default

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 9987 TBIO Lab Rotation Spring

Level: Graduate

Grading: Pass/Fail Default

TBIO 9991 Continuous Registration

Continuous Registration

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 9992 Continuous Registration

Continuous Registration

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 9993 Continuous Registration

Level: Graduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 9994 Continuous Registration

This section is used by master's students who have completed all degree requirements except incomplete course grades, or by master's and doctoral students who have completed all degree requirements, including defense of the doctoral dissertation, but have not yet graduated. Students may register for this course only with permission of the Graduate School. No registration fee is charged. A student enrolled in Continuous Registration – 993/994-01, will be certified as enrolled less than half-time.

Level: Graduate, Undergraduate

Grading: Main Campus (UGrad, Grad)

Course registration restrictions:

Enrollment is limited to Graduate level students.

TBIO 9999 Thesis Research

Thesis Research

Level: Graduate

Grading: No Grade

Course registration restrictions:

Enrollment is limited to Graduate level students.