MOLECULAR, CELLULAR AND DEVELOPMENTAL BIOLOGY (MDB)

MDB 701. Seminar. 1-2 Credit Hours.
Students are required to present their research findings as well as attend Department Faculty seminars.
Components: LEC.
Grading: GRD.
Typically Offered: Fall & Spring.

MDB 707. Principles of Mammalian Development and Organogenesis. 4 Credit Hours.
The course will cover principles and emerging topics in mammalian development including embryonic stem cells, gene regulation, and organogenesis. The goal is to provide students with essential knowledge useful for their research in advanced cell and developmental biology and application to study diseases and health science. The class will have an interactive format, starting with basic lectures in mammalian development; subsequent sessions will include an overview of the selected topic by faculty, followed by round table discussions of current paper(s) in the field.
Components: LEC.
Grading: GRD.
Typically Offered: Spring.

MDB 710. Readings in Cell Biology. 1-6 Credit Hours.
Current and classical research papers in cell, developmental, and molecular biology. Critical evaluation of papers and the methodologies used is included.
Components: LEC.
Grading: GRD.
Typically Offered: Fall, Spring, & Summer.

MDB 713. Topics in Cell Biology. 1-6 Credit Hours.
Formal seminar course in which each student presents a lecture relating to a specific theme. Topic areas include cell, developmental, and molecular biology with the subject changing each term.
Components: LEC.
Grading: GRD.
Typically Offered: Fall, Spring, & Summer.

MDB 751. Advanced Cell Biology Approaches to Molecular Medicine. 2-3 Credit Hours.
Structure, function, and biogenesis of cellular organelles and the cytoskeleton, including their regulation and dynamic interactions. The course is taught in seminars, followed by student-led discussion of recent relevant papers in the literature. The goal of the course is to lead the students to in-depth conceptual and methodological analysis of selected topics up the understanding of current leading-edge research in specific topics in Cell Biology. The course is designed to cover knowledge beyond the text books and to enable the students to design and criticize experimental approaches in Cell Biology acceptable for current peer-review criteria.
Components: LEC.
Grading: GRD.
Typically Offered: Spring.

MDB 752. Current Topics in Mammalian Development. 2-3 Credit Hours.
The course will cover central emerging topics in mammalian development today in cluding embryonic stem cells, micro RNA gene regulation, and organogenesis. Th e class will have an interactive format, starting with basic lecture in mammali an development; subsequent sessions will include an overview of the selected to pic by faculty, followed by round table discussions of current paper(s) in the field.
Components: LEC.
Grading: GRD.
Typically Offered: Spring.

MDB 753. Histology. 1 Credit Hour.
This course will offer the student a virtual slide collection of histology with interactive lectures to support image-based learning. The course covers basic tissues, organs, and systems (vascular; heart; pancreas; eyes; brain; spinal c ord; liver; lung; mouse embryo; GI track). The course will meet once a week fo r one hour. Instructor. Dr. Thomas Champney
Components: LEC.
Grading: GRD.
Typically Offered: Spring.

MDB 763. Stem Cell Biology and Genetic Engineering for Regenerative Medicine. 3 Credit Hours.
This course is designed to provide a current overview on the cell and molecular biology of stem cells, their identification and analysis, and the current status of their use for the repair and regeneration of a variety of tissues including heart, lung, muscle, pancreatic, neuronal and others.
Components: LEC.
Grading: GRD.
Typically Offered: Fall & Spring.

MDB 765. Tumor Biology. 3 Credit Hours.
This course, comprised of lectures and student-led literature discussion, is intended to provide broad-based instruction on the modern molecular and cellular aspects of cancer biology, basic and translational research. The course highlights multiple areas including cell cycle, apoptosis, epidemiology, angiogenesis, and meets two times weekly.
Components: LEC.
Grading: GRD.
Typically Offered: Fall.

MDB 766. Advanced Microscopy and Image Analysis. 2 Credit Hours.
This course will cover the acquisition, use and maintenance of advanced research microscopes including data analysis using the equipment and software already available in the instructors' labs. Topics to be covered include types, function and choice of optical and electron microscopes; sample preparation and synthesis of fluorescent and particle-labeled probes; tranmitted light microscopy; fluorescent microscopy; confocal microscopy; real time cell and particle tracking; digital image analysis and quantitative fluorescence analysis; transmission and scanning electron microscopy, and digital image data interpretation. The course will meet twice a week for one hour, with one lecture and one hands-on laboratory session per week. Class registration is limited to 4-6 students.
Components: LEC.
Grading: GRD.
Typically Offered: Fall.

MDB 810. Master's Thesis. 1-6 Credit Hours.
Current and classical research papers in cell, developmental, and molecular biology. Critical evaluation of papers and the methodologies used is included.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

MDB 820. Research in Residence. 1-6 Credit Hours.
Direct laboratory experience as determined by the Departmental Graduate Committee.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

MDB 830. Doctoral Dissertation. 1-12 Credit Hours.
Required of all candidates for the Ph.D. The student will enroll for credit as determined by his/her advisor but not for less than a total of 24. Not more than 12 hours of MDB 730 may be taken in a regular semester, nor more than six in a summer session. Where a student has passed his/her (a) qualifying examinations, and (b) is engaged in an assistantship, he/she may still take the maximum allowable credit stated above.
Components: THI.
Grading: SUS.
Typically Offered: Fall, Spring, & Summer.

MDB 840. Doctoral Dissertation- Post Candidacy. 1-12 Credit Hours.
Required for all PhD candidates. The student will enroll for credits as determined by their advisor/ Office of Graduate and Postdoctoral Studies but not less than a total of 24. No more than 12 hours of research may be taken in a regular semester, and no more than six in a summer session.
Components: THI.
Grading: SUS.
Typically Offered: Fall, Spring, & Summer.

MDB 850. Research in Residence. 1-12 Credit Hours.
Student must be registered in the semester they plan to defend. Used to establish research in residence for the PhD after the student has been enrolled for the permissible cumulative total in appropriate doctoral research. Student 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.