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|  FLORIDA ATLANTIC UNIVERSITY | NEW COURSE PROPOSAL Graduate Programs | | UGPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____ |
| | Department Biomedical Science College Medicine <i>(To obtain a course number, contact erudolph@fau.edu)</i> | | |
| Prefix GMS Number 6091 | <i>(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)</i> Lab Code C | Type of Course <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab | Course Title Biomedical Science Core Technologies Laboratory |
| Credits <i>(Review Provost Memorandum)</i> 3 | Grading <i>(Select One Option)</i> Regular <input checked="" type="radio"/> Sat/UnSat <input type="radio"/> | Course Description <i>(Syllabus must be attached; see Guidelines)</i> The aim of this course is to provide students with the introductory skills required for research success in the biomedical sciences. The course will combine traditional classroom-based learning with hands-on practical laboratory experience and instruction. | |
| Effective Date <i>(TERM & YEAR)</i> Fall 2018 | <div style="background-color: black; width: 100%; height: 40px;"></div> | | |
| Prerequisites NONE | Corequisites NONE | Registration Controls <i>(Major, College, Level)</i> Instruction Permission Required | |
| <i>Prerequisites, Corequisites and Registration Controls are enforced for all sections of course</i> | | | |
| Minimum qualifications needed to teach course: Member of the FAU graduate faculty and has a terminal degree in the subject area (or a closely related field.) | List textbook information in syllabus or here | | |
| Faculty Contact/Email/Phone Dr. Lisa Brennan; Tel: 561 297 3806; lbrenna6@health.fau.edu Dr. Wen Shen; 561 297 0529; wshen@fau.edu | List/Attach comments from departments affected by new course | | |

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| Approved by Department Chair <u>Janet Robshaw</u> College Curriculum Chair <u>Janet Robshaw</u> College Dean <u>[Signature]</u> UGPC Chair <u>[Signature]</u> UGC Chair <u>[Signature]</u> Graduate College Dean <u>Mohamed Sobhan</u> UFS President _____ Provost _____ | Date <u>6/1/18</u> <u>8/10/18</u> <u>6/4/18</u> <u>2/22/18</u> <u>8/22/18</u> <u>8/22/2018</u> |
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Email this form and syllabus to UGPC@fau.edu one week before the UGPC meeting.

Biomedical Sciences Core Technologies Laboratory

Instructors:

Dr. Lisa Ann Brennan

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Dr. Wen Shen

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Course Code: PCB 6933

Credit: 3cr

Room No: Lab 217B

Class Times: August 20th – Nov 19th 2018. Mondays 2pm-4.50pm

Office Hours: Dr. Brennan - Mondays and Wednesdays 11am-12pm or by appointment

Dr. Wen Shen - By appointment

Textbook and Materials: None required

Course registration and enquiries: Ms Bridget Statler, Office of Graduate Programs

Course requirements: Previous coursework and laboratory course experience in biology, biochemistry and/or cell biology and permission of instructor.

Course Description:

The aim of this course is to provide students with the introductory skills required for research success in the biomedical sciences. The course will combine traditional classroom-based learning with hands-on practical laboratory experience and instruction.

Learning outcomes

On successful completion of the course, students will:

1. Understand research ethics, academic integrity and best practices for biomedical research.
2. Understand and apply the scientific method to form logical and testable hypotheses.
3. Master the principals of experimental design including use of experimental rigor, design of appropriate controls and secondary hypothesis formulation.

4. Understand core technologies of the modern biomedical research laboratory including cell culturing techniques, recombinant DNA technology, gene expression analysis, antibody-based assays and biomedical imaging.

5. Master laboratory record keeping skills, data processing, data formatting and data presentation.

6. Understand the principals of academic integrity including experimental documentation, use of appropriate references, avoidance of plagiarism and scientific authorship.

Course Schedule:

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| Monday August 20th | Introduction to the Biomedical research I | Review Syllabus Lab safety/Responsible conduct in research (RCR) Pipetting/Notebooks. Scientific measurements – SI units. Buffer prep - molarity, pH. Reagent and sample handling. | Dr. Brennan |
| Monday August 27th | Introduction to the Biomedical research II | The scientific method. Forming a hypothesis. Experimental design. Models in biomedical research. Data collection and presentation. Practice: Restriction digest and analysis | Dr. Brennan |
| Monday September 3 rd | Labor day No Lab | | |
| Monday September 10th | Protein | SDS PAGE and Western blot | Dr. Shen |
| Monday September 17th | Protein | Enzyme assays ELISAs | Dr. Shen |
| Monday September 24th | Cells | Cell culture, Viability assays | Dr. Shen |
| Monday October 1st | Cell | Cell histology, H& E staining | Dr. Shen |
| Monday October 8th | IHC/ microscopy | Principles of confocal microscopy | Dr. Shen |
| Monday October 15th | IHC/ microscopy | Examination of stained cells using Zeiss LSM700 | Dr. Shen |
| Monday October 22nd | DNA | Theory: Methods in DNA analyses, PCR, Techniques based on PCR Practice: Forensic DNA Fingerprinting – real world application of RE digest and analysis | Dr. Brennan |
| Monday October 29th | DNA | Theory: Large scale DNA analysis - GWAS/PheWAS Practice: Detection of the human PV92 ALU insertion - DNA extraction, DNA electrophoresis Real world application of PCR and genotyping | Dr. Brennan |
| Monday November 5th | RNA | Theory: Gene expression analysis, Practice: RNA extraction, primer design, RT-PCR | Dr. Brennan |

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| Monday November 12th | RNA | Theory: Large scale transcript analyses - RNAseq Practice: RT-qPCR, RNAseq database analysis | Dr. Brennan |
| Monday November 19th | | Turn in lab books for review | Dr. Brennan |

Assignments:

Students will keep a laboratory notebook detailing experiments performed in each lab. It is student's responsibility to ensure their reports do not have plagiarized materials that are copied and pasted from the textbook or handouts.

Each lab will have a quiz based on both the conceptual and practical elements of the course.

Course Grading:

Laboratory participation 30%

In lab quizzes 20%

Laboratory Reports 50%

Course Policies: Participation is required for every lab class. Missing class, changing presentation dates and/or missing exams is not allowable without prior approval of the instructor and an approved physician's letter or a letter of conflict from an approved University Official to attend a mandatory University-approved activity.

Classroom/Lab etiquette: Please refer to the FAU Catalog and Student Handbook. Compliance with university rules and regulations is expected of all students.

Academic Honor Code: Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001.

The FAU Honor Code requires a faculty member, student, or staff member to notify an instructor when there is reason to believe an academic irregularity is occurring in a course. The instructor must pursue any reasonable allegation, taking action where appropriate. The following constitute academic irregularities:

1. The use of notes, books or assistance from or to other students while taking an examination or working on other assignments, unless specifically authorized by the instructor, are defined as acts of cheating.
2. The presentation of words or ideas from any other source as one's own is an act defined as plagiarism.
3. Other activities that interfere with the educational mission of the University.

For full details of the FAU Honor Code, see University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Honor_Code.pdf.

Attendance Policy Statement:

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.

Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

Disability policy Statement: In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Counseling and Psychological Services (CAPS) Center:

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>.

Course developed by Drs. Lisa Brennan and Wen Shen, Department of Biomedical Science, College of Medicine, FAU