Ethics and Integrity Requirement Proposal

For Graduate Programs in the School of Biomedical Engineering and Sciences

Effective August 1, 2021

The Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences (SBES) has developed the following procedure to satisfy the CGS&P Resolution 2012-13B, which requires "that all graduate students participate in ethics and integrity activities as part of their graduate studies." SBES graduate students who have satisfied these requirements through the procedure proposed herein will have this fact noted in their plan of study when this plan is submitted to the Graduate School for approval.

The procedure proposed by SBES consists of the following requirements to be made of all new SBES graduate students.

1. All entering SBES graduate students are required to attend a half-day orientation prior to the beginning of the fall semester. Attendance is taken at this orientation and will be recorded in each student's departmental record. At this orientation the University and SBES policies and procedures as well as Ethics and Integrity Requirements will be presented, and students will be informed of the timeline for satisfying these requirements.

2. All new graduate students at the Virginia Tech campus are required to complete the BMES 5984 *(permanent course number TBD)*: "BME Ethics Professional Development" during their first fall semester. The instructor of this course will cover (a) plagiarism and other violations of the Graduate Honor Code. (b) proper use of professional conventions in citation of existing research and scholarship, accurate reporting and ownership of findings, and acknowledgement of contributions to the work (c) ethical standards in teaching, mentoring, and professional activities (d) avenues for reporting alleged misconduct (e) appropriate research protocols involving human and animal subjects: Institutional Review Board (IRB) and Institutional Animal Care and Use Committee (IACUC) and (e) oral and written communications across boundaries to create a diversity statement for professional use as required by the Virginia Tech Graduate School Ethics requirements. Attendance will be taken and completion will be recorded in the student's departmental record and plan of study. In addition, students will be required to successfully complete the NIH Responsible Conduct of Research (RCR), Conflict of Interest (COI), Biomedical Research, IRB, and IACUC online courses created and maintained by the Collaborative Institutional Training Initiative (CITI) to satisfy additional Virginia Tech requirements.

3. All new graduate students at the Wake Forest campus are required to complete the Wake Forest University Ethics courses including: GRAD 713: Foundations of Scientific Integrity & Professionalism, GRAD 714: Scientific Integrity and Professionalism, GRAD 715: Career Planning for Biomedical Sciences, and GRAD 716: Seminars in Professional Development which meets the requirements of the Wake Forest Graduate School Ethics Requirements. MS students take GRAD 713 and GRAD 714 and PhD students take GRAD 713, GRAD 714, GRAD 715, and GRAD 716.

4. All SBES graduate students are required to attend the BMES 5944 BME Seminar course which is a special series of lectures that cover a wide range of topics beyond the ethics requirements at each campus. Topics include good research practices, strategies to write a fellowship application, e.g., for NIH or NSF, oral communication, and a number of professional development topics such as how to prepare for their first conference talks, networking, and biomedical research.

As stated, all new SBES graduate students must satisfy these requirements. When students submit their plans of study for Departmental and Graduate School approval, the completion of SBES Ethics and Integrity Requirement will be noted.

The proposed procedure for the SBES Ethics and Integrity Requirement satisfies the four required topics enumerated in the Appendix to CGS&P Resolution 2012-13B in the following specific ways.

Required Topic 1: Plagiarism and other violations of the Graduate Honor Code

The definition of plagiarism and responsibilities of graduate students as research participants is covered in the first module of the CITI online course entitled "Introduction to Responsible Conduct of Research." Specific examples and information on best practices are given within the following modules: "Research Misconduct," "Publication Practices and Responsible Authorship," and "Data Acquisition, Management, Sharing and Ownership." In addition, as part of the BMES 5984 BME Ethics Professional Development course students will be introduced to Virginia Tech resources on plagiarism and other violations of the Graduate Honor Code; specifically those resources at the Graduate Honor System (https://graduateschool.vt.edu/academics/expectations/graduate-honor-system.html), including "Avoiding plagiarism, self-plagiarism, and other questionable writing practices: A guide to ethical writing" (https://graduateschool.vt.edu/content/dam/graduateschool_vt_edu/graduate-honor-system/ghsplagiarism.pdf). At Wake Forest, these topics are covered in GRAD 713, 714, 715, and 716.

Required Topic 2. Proper use of professional conventions in citation of existing research and scholarship, accurate reporting and ownership of findings, and acknowledgement of contributions to the work

This required topic is covered in the fourth module of the CITI on-line course entitled "Publication Practices and Responsible Authorship." In addition, as part of the BMES 5984 BME Ethics Professional Development course students will be introduced to Virginia Tech resources on proper citations of existing research, the reporting and ownership of findings and the acknowledgement of contributions of work. These resources include those available at the Graduate Honor System (https://graduateschool.vt.edu/academics/expectations/graduate-honor-system.html), the "Citation Ethics" module from VT Libraries (http://info-skills.lib.vt.edu/using_info/index.html), and the Research Integrity and Consultation Program available through the Virginia Tech Office of Research and Innovation (https://www.research.vt.edu/research-integrity-office.html). At Wake Forest, these topics are covered in GRAD 713, 714, 715, and 716.

Required Topic 3. Ethical standards in teaching, mentoring, and professional activities

This required topic is covered in the CITI on-line course modules entitled "Conflicts of Interest and Commitment," "Mentor/Trainee Responsibilities," "Peer Review," and "Collaborative Research." In addition, as part of the BMES 5984 BME Ethics Professional Development courses students will be introduced to Virginia Tech resources on ethical standards in teaching, mentoring, and professional activities. In particular, Virginia Tech training courses on research misconduct are provided through Office of Research and Innovation (https://www.research.vt.edu/research-integrity-office/responsible-conduct-research.html). The Human Research Protection Program provides information on the procedures and approval requirements for the use of human subjects in research (https://www.research.vt.edu/sirc/hrpp.html). Finally, the Office of Research and Innovation provides access to conflict of interest training and resources (https://www.research.vt.edu/coi/training.html). At Wake Forest, these topics are covered in GRAD 713, 714, 715, and 716.

Required Topic 4. Available avenues for reporting alleged misconduct

The available avenues for SBES graduate students to report alleged misconduct will be presented at orientation, SBES 5944 BME Graduate Seminar, and BMES 5984 BME Ethics Professional Development course. The particular avenues available to students include the Graduate Honor System (https://graduateschool.vt.edu/academics/expectations/graduate-honor-system.html) and the Committee on Faculty Ethics (https://www.facultysenate.vt.edu/about/faculty-senate-ethics-committee.html). Both will be presented and described. Examples of how these resources can be used will be provided and based on situations that have previously arisen in the SBES graduate program. At Wake Forest, these topics are covered in GRAD 713, 714, 715, and 716.