Move of academic program and courses:
This proposal is submitted to move the ownership of the graduate Major in Life Sciences from the College of Arts and Sciences (CAS) to the Bredesen Center for Interdisciplinary Research and Graduate Education (BC).

This policy decision has been formally agreed to by the leadership of CAS, the BC and the Provost's office.

Section I “Course Changes” below shows the request to move all the Life Sciences courses in the UT Graduate Catalog from CAS to migrate unchanged from CAS to the BC.

Section II below explains the change in the program per se.

I. COURSE CHANGES

(LFSC) Life Sciences

MOVE THE LIFE SCIENCES COURSES FROM THE COLLEGE OF ARTS AND SCIENCES TO THE BREDESEN CENTER FOR INTERDISCIPLINARY RESEARCH AND GRADUATE EDUCATION

LFSC 500 Thesis (1-15) Grading Restriction: P/NP only.
Repeatability: May be repeated.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

LFSC 502 Registration/Use of Facilities (1-15) Required for the student not otherwise registered during any semester when student uses university facilities and/or faculty time before degree is completed.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated.
Credit Level Restriction: Graduate credit only.
Registration Restriction(s): Minimum student level – graduate.

LFSC 505 Research Rotation (2) Laboratory rotations with faculty member on clearly defined projects. Written proposal and oral report.
Repeatability: May be repeated. Maximum 8 hours.

LFSC 507 Programming for Biological Data Analysis (3) Topics to be covered include the application of computing, modeling, data analysis, and information technology to fundamental problems in the life sciences.
Repeatability: May be repeated. Maximum 12 hours.

LFSC 510 Special Topics in Life Sciences (1-3) Specializations in biotechnology; cellular, molecular, and developmental biology; environmental toxicology; ethology; plant, physiology and genetics; and physiology.
Repeatability: May be repeated. Maximum 9 hours.

LFSC 515 Introduction to Genome Science and Technology I (1) Introduction to research in genome science and technology concentration.
Grading Restriction: Satisfactory/No Credit grading only.

LFSC 517 Genomics and Bioinformatics (3)
Cross-listed: (See Microbiology 540.)

LFSC 520 Genome Science and Technology I (4) Overview of genomics, advanced genetics principles.

LFSC 521 Genome Science and Technology II (4) Analytical technologies and special techniques.

LFSC 541 Colloquium (1) Invited speakers. Topics announced in advance.
Grading Restriction: Satisfactory/No Credit grading only.
Repeatability: May be repeated. Maximum 12 hours.
LFSC 591 Foreign Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

LFSC 592 Off-Campus Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

LFSC 593 Independent Study (1-15) Repeatability: May be repeated. Maximum 15 hours.

LFSC 595 Special Topics in Genome Science and Technology (1-3) Tutorials or lectures in variety of special topics to be chosen by instructor. Repeatability: May be repeated. Maximum 12 hours.

LFSC 596 Special Topics in Genome Science and Technology (1-3) Tutorials or lectures in variety of special topics to be chosen by instructor. Repeatability: May be repeated. Maximum 12 hours.

LFSC 600 Doctoral Research and Dissertation (3-15)
Grading Restriction: P/NP only.
Repeatability: May be repeated.
Registration Restriction(s): Minimum student level – graduate.

LFSC 615 Journal Club in Genome Science and Technology (1) Reading and discussion based on current literature. Grading Restriction: Satisfactory/No Credit grading only. Repeatability: May be repeated. Maximum 12 hours. Registration Restriction(s): Minimum student level – graduate.

LFSC 695 Advanced Topics in Genome Science and Technology (1-3) Tutorials or lectures on variety of advanced topics to be chosen by instructor. Repeatability: May be repeated. Maximum 12 hours. Registration Restriction(s): Minimum student level – graduate.

LFSC 696 Advanced Topics in Genome Science and Technology (1-3) Tutorials or lectures on variety of advanced topics to be chosen by instructor. Repeatability: May be repeated. Maximum 12 hours. Registration Restriction(s): Minimum student level – graduate.

Rationale:
All courses listed above are to be moved/added to the Bredesen Center for Interdisciplinary Research and Graduate Education and removed/dropped from the College of Arts and Sciences. This is to align with the re-organization of the Life Sciences programs as a whole from under the administration of the College of Arts and Sciences to that of the Bredesen Center for Interdisciplinary Research and Graduate Education. The purpose of this move is to align all joint UTK and ORNL graduate programs under the administration of the University of Tennessee-Oak Ridge Innovation Institute.

Impact on staffing: The courses will continue to be taught by the faculty in the Genome Science and Technology graduate program, which offers the sole active concentration in the Life Sciences major.

Financial impact: The Bredesen Center operational cost will increase with the administrative responsibility of taking on this joint PhD program. The BC is working with Budget and Finance to propose a revised Bredesen Center budget for the transition of the LFSC program.

Impact on other academic units including those in other colleges:
Currently the Bredesen Center is listed as an “other academic unit” thus the tuition generated under LFSC will not flow back to the Bredesen Center but rather proportionately to all of the academic units. While the College of Arts and Sciences might lose some of the tuition revenue, the administrative costs will shift from them to the Bredesen Center. Historically, the Genome Science and Technology graduate students also serve as Graduate Teaching Assistants to help teach courses in the College of Arts and Sciences; the Bredesen Center has agreed in principle to continue to allow Genome Science and Technology students to participate in TA positions, which will largely be at the graduate advisor’s discretion (many of whom are Arts and Sciences faculty). The College of Arts and Sciences has offered to negotiate a continuation of the GTA agreement whereby GST graduate students will continue to fulfill teaching needs in the College.
Program learning outcomes:
No changes.

Support from assessment activities: No changes.

Additional Documentation:
See copy of approved memo below signed by UT-ORII Education Director, CAS Associate Dean, and Provost recognizing agreement to this catalog revision. Confirmation of the CAS faculty vote regarding the move will be included in their catalog proposal.

August 16, 2022

Dear Dean Thompson,

This memo serves as an agreement in principle that the leadership in College of Arts and Sciences, the Bredesen Center and the University of Tennessee–Oak Ridge Innovation Institute (UT-ORII) have discussed and approve proposing changes to the Graduate Catalog for the Life Sciences programs, namely, the Life Sciences Degree programs (MS and PhD) and concentrations, as well as all Life Sciences courses listings. We propose moving these Life Sciences programs, which are currently managed under the College of Arts and Sciences, to the Intercollegiate Unit, Bredesen Center for Interdisciplinary Research and Graduate Education.

Of course, the final move will require faculty and administration approvals to the graduate catalog changes, which we will be proposing during the Academic 2022/23 year, but we have discussed and agree with moving forward with the catalog change request.

Thank you,
Dr. Philip Rack
UT-ORII Education Director

Dr. Chuck Collins
Executive Associate Dean
College of Arts & Sciences

Dr. John Zomchick
Provost & Senior Vice Chancellor
II. PROGRAM CHANGES

MOVE THE LIFE SCIENCES MAJOR (MS AND PHD) FROM THE COLLEGE OF ARTS AND SCIENCES TO THE BREDESEN CENTER FOR INTERDISCIPLINARY RESEARCH AND GRADUATE EDUCATION

In the 2023-24 Graduate Catalog, for the Life Sciences Major (MS and PhD) move the graduate program from the College of Arts and Sciences to the Bredesen Center for Interdisciplinary Research and Graduate Education.

Also, revise program description as shown below. The degrees offered, PhD and MS with Thesis, remain the same.

**Life Sciences Major, PhD**

New Program Description: The program leading to the Doctor of Philosophy degree with a major in Life Sciences is intercollegiate. Faculty from two campuses, Oak Ridge National Laboratory and the University of Tennessee, serve as advisers. The program is administered jointly. The concentration in Genome Science and Technology is housed in the UT-Oak Ridge Innovation Institute, while the concentration in Plant Physiology and Genetics is currently inactive.

Formerly: The program leading to the Doctor of Philosophy degree with a major in life sciences is interdepartmental and intercollegiate and is designed to augment offerings of individual departments in two concentrations – genome science and technology, and plant physiology and genetics. Students interested in these areas should contact the director of the area of interest. Each concentration is administered separately and has unique admission requirements.

**REVISE DESCRIPTION FOR THE GST CONCENTRATION**

**Genome Science and Technology Concentration**

Albrecht von Arnim, Biochemistry & Cellular and Molecular Biology, Director

The University of Tennessee-Oak Ridge National Laboratory Graduate School of Genome Science and Technology (GST) operates a unique and multidisciplinary program for full time graduate study leading to the Doctor of Philosophy degree. The program trains students around the interface of the biological and computational sciences. Graduates typically pursue careers in biological science in academia, industry, or governmental organizations. The program is designed to take advantage of collaboration between the University of Tennessee, Knoxville, and the Oak Ridge National Laboratory. Students conduct research and develop scientific creativity in emerging areas of life science, with emphasis on genomics, structural biology, proteomics, computational biology and bioinformatics, and bioanalytical technologies. Scientists from both campuses participate in teaching. Research projects pursued for either the MS or PhD are guided by a faculty member from either campus.

Formerly: The University of Tennessee-Oak Ridge National Laboratory Graduate School of Genome Science and Technology (GST) is a unique and multidisciplinary program for full time graduate study leading to the Doctor of Philosophy degree. The program trains students around the interface of the biological and computational sciences. Graduates typically pursue careers in biological science in academia, industry, or governmental organizations. The program is designed to take advantage of collaboration between the University of Tennessee, Knoxville, and the Oak Ridge National Laboratory. Students conduct research and develop scientific creativity in emerging areas of life science, with emphasis on genomics, structural biology, proteomics, computational biology and bioinformatics, and bioanalytical technologies. Scientists from both campuses participate in teaching. Research projects pursued for either the MS or PhD are guided by a faculty member from either campus.

**Life Sciences Major, MS**

New Program Description: The program leading to the MS degree with a major in Life Sciences is intercollegiate. Faculty from two campuses, Oak Ridge National Laboratory and the University of Tennessee, serve as advisers. The program is administered jointly. The concentration in Genome Science and Technology is housed in the UT-Oak Ridge Innovation Institute, while the concentration in Plant Physiology and Genetics is currently inactive.

Formerly: The program leading to the Master of Science degree with a major in life sciences is interdepartmental and intercollegiate and is designed to augment offerings of individual departments in two concentrations – genome science and technology, and plant physiology and genetics. Students interested in these areas should contact the director of the area of interest. Each concentration is administered separately and has unique admission requirements.
REVISE DESCRIPTION FOR THE GST CONCENTRATION

**Genome Science and Technology, Thesis**  
*Albrecht von Arnim, Biochemistry & Cellular and Molecular Biology, Director*

**New Program Description:** The University of Tennessee-Oak Ridge National Laboratory Graduate School of Genome Science and Technology (GST) operates a unique and multidisciplinary program for full time graduate study leading to the MS degree. The program trains students around the interface of the biological and computational sciences. Graduates typically pursue careers in biological science in academia, industry, or governmental organizations. The program is designed to take advantage of collaboration between the University of Tennessee, Knoxville, and the Oak Ridge National Laboratory. Students conduct research and develop a deeper understanding in emerging areas of life science, with emphasis on genomics, structural biology, proteomics, computational biology and bioinformatics, and bioanalytical technologies. Scientists from both campuses participate in teaching. Research projects pursued for the MS are guided by a faculty member from either campus.

**Formerly:** The University of Tennessee-Oak Ridge National Laboratory Graduate School of Genome Science and Technology (GST) is a unique and multidisciplinary program for full time graduate study leading to the Master of Science degree. The program trains students around the interface of the biological and computational sciences. Graduates typically pursue careers in biological science in academia, industry, or governmental organizations. The program is designed to take advantage of collaboration between the University of Tennessee, Knoxville, and the Oak Ridge National Laboratory. Students conduct research and develop a deeper understanding in emerging areas of life science, with emphasis on genomics, structural biology, proteomics, computational biology and bioinformatics, and bioanalytical technologies. Scientists from both campuses participate in teaching. Research projects pursued for the MS are guided by a faculty member from either campus.

**BREDENES CENTER FOR INTERDISCIPLINARY RESEARCH AND GRADUATE EDUCATION**

In the 2023-24 Graduate Catalog, revise the Bredesen Center for Interdisciplinary Research and Graduate Education page to show/include the Life Sciences Major for the MS and the PhD.

**Majors, Degrees**
- Data Science & Engineering Major, PhD  
- Energy Science & Engineering Major, PhD  
- Life Sciences Major, MS  
- Life Sciences Major, PhD

The Bredesen Center for Interdisciplinary Research and Graduate Education offers three interdisciplinary PhDs, Energy Science and Engineering (ESE) and Data Science and Engineering (DSE), and Life Sciences – Genome Science and technology (LFSC-GST), focusing on many areas of energy science, applied data science, and life sciences. LFSC-GST also offers the MS. These interdisciplinary degrees are offered collaboratively between the University of Tennessee and Oak Ridge National Laboratory under the oversight of the University of Tennessee-Oak Ridge Innovation Institute (UT-ORII).

The Bredesen Center brings together extensive and complementary resources at The University of Tennessee, Knoxville (UTK) and Oak Ridge National Laboratory (ORNL) to increase science, technology, engineering, computing, and mathematics academic and research activities of national significance focused in areas of energy, data, and life sciences and engineering.

For more information about these programs visit their websites:  
https://bredesencenter.utk.edu  
https://gst.tennessee.edu

**Formerly:** The Bredesen Center for Interdisciplinary Research and Graduate Education offers two interdisciplinary PhDs, Energy Science and Engineering (ESE) and Data Science and Engineering (DSE), focusing on many areas of energy and applied data sciences. These interdisciplinary degrees provide breadth while preserving the depth and rigor of a PhD program.
The Bredesen Center brings together extensive and complementary resources at The University of Tennessee, Knoxville (UTK) and Oak Ridge National Laboratory (ORNL) to increase science, technology, engineering, computing, and mathematics academic and research activities of national significance focused on energy and data-related science and engineering.

The Bredesen Center offers the Doctor of Philosophy degree with a major in Energy Science and Engineering or a concentration in ESE for students who prefer pursuing doctoral studies through existing programs. Graduate students will join interdisciplinary research teams at ORNL and UTK, which will expose them to problem-oriented research and development and encourage them to approach research problems from new directions.

The Bredesen Center also offers the Doctor of Philosophy degree with a major in Data Science and Engineering. This interdisciplinary degree is a collaborative effort supported by selected faculty from various colleges at the University of Tennessee, Knoxville, the UT Health Sciences Center, the University of Tennessee, Chattanooga, and research staff of Oak Ridge National Laboratory.

For more information about the Bredesen Center visit their website.

**Rationale:**
All of the above additions to unit, program, and concentration descriptions reflect a change in organization and administration of the Life Sciences programs from College of Arts and Sciences to Bredesen Center for Interdisciplinary Research and Graduate Education. The purpose of this move is to align all joint UTK and ORNL graduate programs under the administration of the University of Tennessee-Oak Ridge Innovation Institute.

**Financial Impact:**
The Bredesen Center operational cost will increase with the administrative responsibility of taking on this joint PhD program and is working with Budget and Finance to propose a revised Bredesen Center budget for the transition of the LFSC program.

**Impact on other academic units including those in other colleges:**
Currently the Bredesen Center is listed as an “other academic unit” thus the tuition generated will not flow back to the Bredesen Center but rather proportionately to all of the academic units. While the College of Arts and Sciences might lose some of the tuition revenue, the administrative costs will shift from them to the Bredesen Center. Historically, the Genome Science and Technology graduate students also serve as Graduate Teaching Assistants to help teach courses in the College of Arts and Sciences; the Bredesen Center has agreed in principle to continue to allow Genome Science and Technology students to participate in TA positions, which will largely be at the graduate advisor’s discretion (many of whom are Arts and Sciences faculty). The College of Arts and Sciences has offered to negotiate a continuation of the GTA agreement whereby GST graduate students will continue to fulfill teaching needs in the College.

**Program learning outcomes:**
No changes.

**Support from assessment activities:**
No changes.

**Additional Documentation:** See memo signed by UT-ORII Education Director, CAS Associate Dean, and Provost recognizing agreement to this catalog revision. Confirmation of the CAS faculty vote regarding the move will be included in their curriculum proposal.