School of Natural Sciences and Mathematics

Biochemistry (BS)

The Biochemistry program at UT Dallas, administered through the Department of Chemistry and Biochemistry, draws on faculty from the Departments of Chemistry and Biochemistry, Biological Sciences, and researchers from UT Southwestern Medical School to provide courses and research opportunities to its majors. The Biochemistry major bridges the gap between modern Chemistry and Biology. The curriculum, designed to prepare students for either graduate work in the Biological Sciences, the Chemical Sciences, or for entry-level positions in the biotechnology industry, builds on a base of biology, chemistry, physics, and mathematics to provide the student the opportunity to develop essential theoretical and practical skills.

UT Southwestern Medical School

UT Dallas Biochemistry majors may perform their research in the laboratories of faculty members from the departments of Biochemistry, Internal Medicine, Pharmacology and Physiology at UT Southwestern, as available.

Bachelor of Science in Biochemistry

Degree Requirements (120 semester credit hours)

View an Example of Degree Requirements by Semester

Chemistry and Biochemistry Faculty

FACG> nsm-chemistry-bs,nsm-biochemistry-bs

Professors: Kenneth J. Balkus Jr., Ray H. Baughman, John P. Ferraris, Juan E. González, Inga H. Musselman, Bruce M. Novak, Kelli Palmer, Lawrence J. Reitzer, A. Dean Sherry, Stephen Spiro, Mihaela C. Stefan, Li Zhang, Michael Qiwei Zhang, Jie Zheng

Associate Professors: Jung-Mo Ahn, Michael C. Biewer, Sheena D'Arcy, Nikki Delk, Gregg R. Dieckmann, Sheel Dodani, Heng Du, Jeremiah J. Gassensmith, Warren J. Goux, Tae Hoon Kim, Gabriele Meloni, Faruck Morcos, Steven O. Nielsen, Paul Pantano, John W. Sibert IV, Ronald A. Smaldone, Duane D. Winkler, Zhenyu Xuan

Assistant Professors: Nicole De Nisco, Jiyong Lee

Clinical Professor: David Murchison

Research Assistant Professors: Li Liu, Ru-Hung Wang

Senior Lecturer: Wen-Ho Yu

Professors Emeriti: Lee A. Bulla, Richard A. Caldwell, Donald M. Gray

Associate Professors Emeriti: Gail A. M. Breen, Dennis L. Miller

Professors of Instruction: Scott A. Rippel, Amandeep Sra, Uma Srikanth

Associate Professors of Instruction: Sergio Cortes, Sandhya R. Gavva, Yu Huang, Wen Lin, Elizabeth Pickett, Yanping Qin, Ilya Sapozhnikov

Assistant Professors of Instruction: Ida Klang, Meenakshi Maitra, Caitlin Maynard, Iti Mehta, Jing Pan, Nimanka Panapitiya, Ruben Ramirez, Eva Sadat, Subha Sarcar, Michelle Wilson, Zhuoru Wu

Biological Sciences Faculty

FACG> nsm-biology-bs

Professors: Juan E. González, Kelli Palmer, Lawrence J. Reitzer, Donal Skinner, Stephen Spiro, Li Zhang, Michael Qiwei Zhang

Associate Professors: Joseph Boll, Nicole De Nisco, Nikki Delk, Tian Hong, Tae Hoon Kim, Faruck Morcos, Duane D. Winkler, Zhenyu Xuan

Assistant Professors: Nicholas Dillon, Xintong Dong, Lin Jia, Purna Joshi, Brandon Kim, Erica Sanchez, Darshan Sapkota, Yuki Shindo, jxs230052

Professors Emeriti: Lee A. Bulla, Donald M. Gray

Associate Professors Emeriti: Gail A. M. Breen, Dennis L. Miller

Clinical Professor: David Murchison, Eberhard Voit

Professors of Instruction: Scott A. Rippel, Uma Srikanth

Associate Professors of Instruction: Mehmet Candas, Meenakshi Maitra, Jing Pan, Elizabeth Pickett, Michelle Wilson, Wen-Ho Yu

Assistant Professors of Instruction: Stephanie Boyd, Anne Davenport, Amy Jo Gomez, Yi Huang, Li Liu, Caitlin Maynard, Simbarashe Mazambani, Ramesh Padmanabhan, Jing Pan, Ruben Ramirez, Eva Sadat, Subha Sarcar, Michelle Wilson, Zhuoru Wu

Research Assistant Professor: Ru-Hung Wang

Lecturer: Kathleen McRoy

I. Core Curriculum Requirements: 42 semester credit hours[1]

Communication: 6 semester credit hours

COMM 1311 Introduction to Communication Studies

RHET 1302 Rhetoric

Or select any 6 semester credit hours from Communication Core courses (see advisor)

Mathematics: 3 semester credit hours

MATH 2417 Calculus I[2, 3]

or MATH 2413 Differential Calculus[2, 3]

Or select any 3 semester credit hours from Mathematics Core courses (see advisor)

Life and Physical Sciences: 6 semester credit hours

CHEM 1311 General Chemistry I[2]

or CHEM 1315 Honors Freshman Chemistry I[2]

CHEM 1312 General Chemistry II[2]

or CHEM 1316 Honors Freshman Chemistry II[2]

Or select any 6 semester credit hours from Life and Physical Sciences Core courses (see advisor)

Language, Philosophy and Culture: 3 semester credit hours

Select any 3 semester credit hours from Language, Philosophy and Culture Core courses (see advisor)

Creative Arts: 3 semester credit hours

Select any 3 semester credit hours from Creative Arts Core courses (see advisor)

American History: 6 semester credit hours

Select any 6 semester credit hours from American History Core courses (see advisor)

Government/Political Science: 6 semester credit hours

GOVT 2305 American National Government

GOVT 2306 State and Local Government

Or select any 6 semester credit hours from Government/Political Science Core courses (see advisor)

Social and Behavioral Sciences: 3 semester credit hours

Select any 3 semester credit hours from Social and Behavioral Sciences Core courses (see advisor)

Component Area Option: 6 semester credit hours

MATH 2417 Calculus I[2, 3]

or MATH 2413 Differential Calculus[2, 3]

MATH 2419 Calculus II[2, 3]

or MATH 2414 Integral Calculus[2, 3]

PHYS 2125 Physics Laboratory I[2, 4]

or PHYS 2421 Honors Physics I - Mechanics and Heat[5]

Or select any 6 semester credit hours from Component Area Option Core courses (see advisor)

II. Major Requirements: 65-67 semester credit hours

Major Preparatory Courses: 28-30 semester credit hours beyond Core Curriculum

BIOL 2111 Introduction to Modern Biology Workshop I

BIOL 2311 Introduction to Modern Biology I

CHEM 1111 General Chemistry Laboratory I

or CHEM 1115 Honors Freshman Chemistry Laboratory I

CHEM 1112 General Chemistry Laboratory II

or CHEM 1116 Honors Freshman Chemistry Laboratory II

CHEM 1311 General Chemistry I[2]

or CHEM 1315 Honors Freshman Chemistry I[2]

CHEM 1312 General Chemistry II[2]

or CHEM 1316 Honors Freshman Chemistry II[2]

CHEM 2323 Introductory Organic Chemistry I[6]

or CHEM 2327 Honors Organic Chemistry I[6]

CHEM 2325 Introductory Organic Chemistry II[6]

or CHEM 2328 Honors Organic Chemistry II[6]

CHEM 2233 Introductory Organic Chemistry Laboratory[6]

or CHEM 2237 Honors Organic Chemistry Laboratory[6]

CHEM 2401 Introductory Quantitative Methods in Chemistry

PHYS 2325 Mechanics[7]

and PHYS 2125 Physics Laboratory I[2, 4]

or PHYS 2421 Honors Physics I - Mechanics and Heat[7, 8]

PHYS 2326 Electromagnetism and Waves[7]

or PHYS 2422 Honors Physics II - Electromagnetism and Waves[7]

PHYS 2126 Physics Laboratory II

MATH Sequence - Students may choose one of the following sequences:

I. MATH 2413 Differential Calculus[2, 3]

and MATH 2414 Integral Calculus[2, 3]

and MATH 2415 Calculus of Several Variables

or

II. MATH 2417 Calculus I[2, 3]

and MATH 2419 Calculus II[2, 3]

and MATH 3351 Advanced Calculus

Major Core Courses: 37 semester credit hours

BIOL 3401 Genetics

BIOL 3402 Molecular and Cell Biology

BIOL 3380 Biochemistry Laboratory

BIOL 3461 Biochemistry I

or CHEM 3461 Biochemistry I

BIOL 3462 Biochemistry II

or CHEM 3462 Biochemistry II

CHEM 3321 Physical Chemistry I

CHEM 3322 Physical Chemistry II

CHEM 3472 Instrumental Analysis

Any two upper-division Chemistry or Biology electives (8 semester credit hours) not taken to fulfill above.

III. Elective Requirements: 11-13 semester credit hours

Free Electives: 11-13 semester credit hours

STAT 2332 Introductory Statistics for Life Sciences (strongly recommended)

The plan must include sufficient upper-division courses to total 45 upper-division semester credit hours.

Fast Track Baccalaureate/Master's Degrees

For students with strong academic record who intend to pursue master's studies at UT Dallas, accelerated BS/MS Fast Tracks are available. After Fast Track admission to an MS program, students may take up to 15 semester credit hours of approved graduate courses in their senior year to use toward completion of both the BS and MS degrees. The available Fast Track options and their admission requirements, if any, in addition to having completed 90 or more semester credit hours (out of which 36 hours are from the core curriculum) with a cumulative GPA of at least 3.00, are as follows:

- MS in Chemistry

- MS in Biotechnology: Students must have a cumulative GPA of at least 3.00 in all courses.
- MS in Bioinformatics and Computational Biology: Students must have a cumulative GPA of at least 3.20 in all mathematics and statistics courses.
- MS in Data Science and Statistics (Only Data Science and Applied Statistics specializations): Students must have a cumulative GPA of at least 3.20 in all mathematics and statistics courses.

Interested students, after reviewing the UT Dallas Fast Track policy, should contact their undergraduate advisor and the graduate advisor of the intended MS program well in advance of their junior year to prepare a course sequence permitting maximal advantage and apply to the Fast Track program.

1. Curriculum Requirements can be fulfilled by other approved courses from institutions of higher education. The courses listed are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at UT Dallas.

2. A required Major course that also fulfills Core Curriculum requirement. Semester credit hours are counted in the Core Curriculum.

3. Three semester credit hours of Calculus are counted to fulfill the Mathematics Core Requirement with the remaining one semester credit hour to be counted under Component Area Option Core.

4. Six semester credit hours of Chemistry are counted under Science core, and one semester of Physics (PHYS 2125) are counted under Component Area Option core.

5. Students may use PHYS 2421 as part of the component area core curriculum requirement instead of PHYS 2125 if they choose that Physics sequence.

6. Indicates a prerequisite class to be completed before enrolling for upper-division classes.

7. Students will take one of the two Physics sequences: PHYS 2325 and PHYS 2326 or PHYS 2421 and PHYS 2422 with accompanying labs.

8. Students who complete PHYS 2421 do not need to complete PHYS 2125.

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