School of Natural Sciences and Mathematics

Molecular Biology and Healthcare Management (Double Major) (BS)

Bachelor of Science in Molecular Biology and Healthcare Management (Double Major)

Degree Requirements (152-153 semester credit hours)\(^1\) \(^2\)

JSOM Faculty


Associate Professors: Mehmet Ayvaci, Nina Baranchuk, Zhonglan Dai, Rebecca Files, Surya N. Janakiraman, Robert L. Kieschnick Jr., Atanu Lahiri, Jun Li, Ningzhong Li, Livia Markóczy, Ramachandran (Ram) Natarajian, Naim Bugra Ozel, Young U. Ryu, Harpreet Singh, David J. Springate, Upender Subramanian, Shaojie Tang, Kelsey D. Wei, Han (Victor) Xia, Yexiao Xu, Alejandro Zentner, Jieying Zhang, Yuan Zhang, Feng Zhao, Yibin Zhou

Assistant Professors: Sheen Levine, Radha Mookerjee, Alejandro Rivera Mesias, Christian Von-Drathen, Guihua Wang, Steven Xiao, Zhe (James) Zhang

Associate Professors Emeriti: J. Richard Harrison, Jane Salk

Visiting Professor: Emily Choi


Clinical Associate Professors: Shawn Alborz, Dawn Owens, Carolyn Reichert

Clinical Assistant Professors: Moran Blueshtein, Judd Bradbury, Jeffery (Jeff) Hicks, Kristen Lawson, Liping Ma, Ravi Narayan, Parneet Pahwa, Nassim Sohaee

Professors of Instruction: Semiramis Amirpour, Mary Beth Goodrich, Chris Linsteadt, Luell (Lou) Thompson

Associate Professors of Instruction: Amal El-Ashmawi, Ayfer Gurun, Maria Hasenhuttl, Jennifer G. Johnson, Hubert Zydorek

Assistant Professors of Instruction: Julie Haworth, Daniel Karnuta, Victoria D. McCrady

Professors of Practice: Tiffany A. Bortz, Alexander Edsel, Rajiv Shah, Keith Thurgood

Associate Professors of Practice: Richard Bowen, Jackie Kimzey, Margaret Smallwood, Steven Solcher, Kathy Zolton

Assistant Professors of Practice: Edward Meda, Timothy Stephens

Senior Lecturers: Thomas (Tom) Henderson, Joseph Mauriello, Prithi Narasimhan, Matt Polze, Robert Wright

NSM Faculty

Professors: Rockford K. Draper, Juan E. González, Lawrence J. Reitzer, Stephen Spiro, Li Zhang, Michael Qiwei Zhang

Associate Professors: Zachary Campbell, Jeff L. DeJong, Nikki Delk, Tae Hoon Kim, Faruck Morcos, Kelli Palmer, Duane D. Winkler, Zhenyu Xuan, xd131030

Assistant Professors: Nicole De Nisco, Nicholas Dillon, Purna Joshi, Jyoti Misra, Darshan Sapkota

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

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

Clinical Professor: David Murchison

Research Assistant Professors: Lan Guo, Li Liu

Professors of Instruction: Scott A. Rippel, Uma Srikanth

Associate Professors of Instruction: Mehmet Candás, Wen-Ju Lin, Elizabeth Pickett, Ilya Sapozhnikov, Michelle Wilson

Assistant Professors of Instruction: Ida Klang, Meenakshi Maitra, Caitlin Maynard, Iti Mehta, Ramesh Padmanabhan, Jing Pan, Ruben D. Ramirez, Eva Sadat, Subha Sarcar, Zhuoru Wu

Senior Lecturer: Wen-Ho Yu

I. Core Curriculum Requirements: 42 semester credit hours

Communication: 6 semester credit hours

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

Mathematics: 3 semester credit hours
MATH 2417 Calculus I$^4, 5, 6, 7, 8$

or MATH 2413 Differential Calculus$^4, 5, 6, 7, 8$

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$^5$

or CHEM 1315 Honors Freshman Chemistry$^5$

CHEM 1312 General Chemistry II$^5$

or CHEM 1316 Honors Freshman Chemistry II$^5$

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

Choose one of the following.$^9$

BA 1310 Making Choices in Free Market Systems$^4, 5$

BA 1320 Business in a Global World$^4, 5$

ECON 2301 Principles of Macroeconomics$^4, 5$

ECON 2302 Principles of Microeconomics$^4, 5$

Or select any 3 semester credit hours from Social and Behavioral Sciences Core courses (see advisor)
Component Area Option: 6 semester credit hours

Choose two of the following:

- **MATH 2419** Calculus II\(^5\), \(^6\), \(^10\)
  - or **MATH 2414** Integral Calculus\(^5\), \(^6\), \(^10\)
- **BA 1310** Making Choices in Free Market Systems\(^4\), \(^5\)
- **BA 1320** Business in a Global World\(^4\), \(^5\)
- **ECON 2301** Principles of Macroeconomics\(^4\), \(^5\)
- **ECON 2302** Principles of Microeconomics\(^4\), \(^5\)

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

II. Major Requirements: 89-90 semester credit hours

Biology Major Preparatory Courses: 20-21 semester credit hours beyond Core Curriculum

- **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\(^5\)
  - or **CHEM 1315** Honors Freshman Chemistry I\(^5\)
- **CHEM 1312** General Chemistry II\(^5\)
  - or **CHEM 1316** Honors Freshman Chemistry II\(^5\)
- **CHEM 2323** Introductory Organic Chemistry I\(^4\)
  - or **CHEM 2327** Honors Organic Chemistry I\(^4\)
- **CHEM 2325** Introductory Organic Chemistry II\(^4\)
  - or **CHEM 2328** Honors Organic Chemistry II\(^4\)
- **CHEM 2233** Introductory Organic Chemistry Laboratory\(^4\)
  - or **CHEM 2237** Honors Organic Chemistry Laboratory\(^4\)
- **MATH 2417** Calculus I\(^4\), \(^5\), \(^6\), \(^7\), \(^8\)
  - or **MATH 2413** Differential Calculus\(^4\), \(^5\), \(^6\), \(^7\), \(^8\)
- **MATH 2419** Calculus II\(^5\), \(^6\), \(^10\)
  - or **MATH 2414** Integral Calculus\(^5\), \(^6\), \(^10\)
PHYS 2325 Mechanics and PHYS 2125 Physics Laboratory I
  or PHYS 2421 Honors Physics I - Mechanics and Heat
PHYS 2326 Electromagnetism and Waves
  or PHYS 2422 Honors Physics II - Electromagnetism and Waves
PHYS 2126 Physics Laboratory II

Biology Core Courses: 33 semester credit hours

BIOL 2111 Introduction to Modern Biology Workshop I
BIOL 2112 Introduction to Modern Biology Workshop II
BIOL 2281 Introductory Biology Laboratory
BIOL 2311 Introduction to Modern Biology I
BIOL 2312 Introduction to Modern Biology II
BIOL 3101 Classical and Molecular Genetics Workshop
BIOL 3102 Eukaryotic Molecular and Cell Biology Workshop
BIOL 3161 Biochemistry Workshop I
BIOL 3162 Biochemistry Workshop II
BIOL 3301 Classical and Molecular Genetics
BIOL 3302 Eukaryotic Molecular and Cell Biology
BIOL 3361 Biochemistry I
BIOL 3362 Biochemistry II
  or BIOL 3335 Microbial Physiology
BIOL 3380 Biochemistry Laboratory
BIOL 4461 Biophysical Chemistry

Business Major Preparatory Courses: 12 semester credit hours beyond Core Curriculum

ACCT 2301 Introductory Financial Accounting
ACCT 2302 Introductory Management Accounting
BLAW 2301 Business and Public Law
OPRE 3360 Managerial Methods in Decision Making Under Uncertainty
  or STAT 2332 Introductory Statistics for Life Sciences
  or STAT 3360 Probability and Statistics for Management and Economics
Choose two of the following:
Making Choices in Free Market Systems or Principles of Microeconomics

Business Core Courses: 24 semester credit hours

Introduction to Professionalism and Communication in Business or Professionalism and Communication in Business

Managing Communications in Business

International Business

Business Finance

Operations Management

Information Technology for Business

Introduction to Human Resource Management or Organizational Behavior

Principles of Marketing

III. Elective Requirements: 21 semester credit hours

A practicum experience of at least 160 working hours is required:

Healthcare Management Internship or Management Internship

A community engagement experience is required:

Social Sector Engagement and Community Outreach Practicum

Healthcare Management Core Courses: 18 semester credit hours

Introduction to Healthcare Management

Healthcare Regulatory Environment

Healthcare Financial Analysis

Complex and Dynamic Healthcare Environment or Economics of Health

Introduction to Healthcare Information Systems

Capstone Senior Project - Healthcare Management
Biology (3 semester credit hours):

- **BIOL 4380** Cell and Molecular Biology Laboratory\textsuperscript{15}
- or **BIOL 3V96** Undergraduate Research in Molecular and Cell Biology
- or **BIOL 4391** Senior Research in Molecular and Cell Biology
- or **BIOL 4399** Senior Honors Research for Thesis in Molecular and Cell Biology

All students must complete at least 51 semester credit hours of upper-division courses to graduate.

1. Incoming freshmen must enroll and complete requirements of UNIV 1010 and the corresponding school-related freshman seminar course. Students, including transfer students, who complete their core curriculum at UT Dallas must take UNIV 2020.

2. Degree is 153-154 semester credit hours if students are required to take NATS 1101.

3. 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.

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

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

6. Six semester credit hours of Calculus are counted under Mathematics Core and Component Area Option Core, and 2 semester credit hours of Calculus are counted as Biology Major Preparatory Courses.

7. Students may elect to substitute MATH 2417 for MATH 2413.

8. In order to make timely degree progress, students should complete MATH 2413 or MATH 2417 by the end of their first semester at UT Dallas. Students who will not meet this requirement should contact their academic advisor to discuss their degree timeline.

9. Certain courses listed are prerequisites for major core, major concentration, or major related courses. Choose accordingly.

10. Students may elect to substitute MATH 2419 for MATH 2414.

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

12. JSOM first-time-in-college freshmen are required to take BCOM 1300 in their first semester. Transfer students and students new to JSOM are required to take BCOM 3300 in their first semester.

13. Students may fulfill the internship requirement with HMGT 4090, BA 4090, or HMGT 4v90 (1-3 semester credit hours). The zero semester credit hour courses HMGT 4090 or BA 4090 are recommended as the most efficient way to satisfy this requirement.
14. Students may fulfill the community engagement requirement with BA 4095, IMS 4335, ENTP 4340, or MKT 4360. The zero semester credit hour course BA 4095 is recommended as the most efficient way to satisfy this requirement.

15. Requires permission of the Biology Undergraduate Advisor to ensure training in recombinant DNA analysis.