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, Norris Bruce, Jianqing Chen, Zhonglan Dai, Rebecca Files, Dorothee Honhon, Bin Hu, Kyle Hyndman, Surya N. Janakiraman, Robert L. Kieschnick Jr., Atanu Lahiri, Jun Li, Ningzhong Li, Livia Markóczy, Amit Mehra, Toyah Miller, Ramachandran (Ram) Natarajan, Naim Bugra Ozel, H. Dennis Park, Cuili Qian, Orlando C. Richard, Young U. Ryu, Gil Sadka, Harpreet Singh, David J. Springate, Upender Subramanian, Kelsey D. Wei, Han (Victor) Xia, Jun Xia, Ying Xie, Yexiao Xu, Alejandro Zentner, Jiying Zhang, Yuan Zhang, Feng Zhao, Yibin Zhou

**Assistant Professors:** Khai Chiong, Emily Choi, Andrew Frazelle, Ying Huang, Joonhwi Joo, Sora Jun, Sheen Levine, Meng Li, Maria Loumioti, Jean-Marie Meier, Radha Mookerjee, Anyan Qi, Alejandro Rivera Mesias, Alessio Saretto, Simon Siegenthaler, Serdar Simsek, Shaojie Tang, Xiaofei Tan, Shervin Tehrani, Ashwin Venkataraman, Christian Von-Drathen, Guihua Wang, Shouqiang Wang, Junfeng Wu, Steven Xiao, Yingjie Zhang, Zhe (James) Zhang, Xiaofei Zhao

**Professors Emeriti:** Dale Osborne, John J. Wiorkowski

**Assistant Professors Emeriti:** J. Richard Harrison, Jane Salk

**Clinical Professors:** John Barden, Britt Berrett, Abhijit Biswas, Ranavir Bose, Shawn Carraher, Larry Chasteen, David Cordell, Howard Dover, John Gamino, Randall S. Guttery, Charles Hazzard, William Hefley, Marilyn Kaplan, Sonia Leach, Peter Lewin, Jeffrey Manzi, Diane S. McNulty, Divakar Rajamani, Daniel Rajaratnam, Kannan Ramanathan, David Ritchey, Rajiv Shah, Mark Thouin, Jeff Weekley, Habte Woldu,
Fang Wu, Laurie L. Ziegler

**Clinical Associate Professors**: Shawn Alborz, Dawn Owens, Avanti P. Sethi, Ramesh Subramoniam, Aysegul Toptal, McClain Watson, David Widdifield, dxp153830. carolyn

**Clinical Assistant Professors**: Athena Alimirzaei, Moran Blueshtein, Judd Bradbury, Sourav Chatterjee, Jerome Gafford, Ayfer Gurun, Maria Hasenhuttl, Julie Haworth, Jeffery (Jeff) Hicks, Revansiddha Khanapure, Kristen Lawson, Kathryn Lookadoo, Liping Ma, Sarah Moore, Ravi Narayan, Parneet Pahwa, Jason Parker, Drew Peabody, Nassim Sohaee

**Assistant Professor of Instruction**: Rasoul Ramezani


**NSM Faculty**

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

**Associate Professors**: John G. Burr, Jeff L. DeJong, Heng Du, Tae Hoon Kim, Kelli Palmer, Duane D. Winkler, Zhenyu Xuan

**Assistant Professors**: Zachary Campbell, Nicole De Nisco, Nikki Delk, Jyoti Misra, Faruck Morcos

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

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

**Clinical Professor**: David Murchison

**Research Assistant Professors**: Lan Guo, Li Liu

**Assistant Professors of Instruction**: Caitlin Braitsch, Ida Klang, Eva Sadat, Zhuoru Wu

**Senior Lecturers**: Mehmet Candas, Wen-Ju Lin, Meenakshi Maitra, Robert C. Marsh, Iti Mehta, Jing Pan, Elizabeth Pickett, Ruben D. Ramirez, Scott A. Rippel, Ilya Sapozhnikov, Subha Sarcar, Uma Srikanth, Michelle Wilson, 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](https://catalog.utdallas.edu/2020/undergraduate/programs/nsm/molecular-biology-healthcare-management) courses (see advisor)

**Mathematics**: 3 semester credit hours
MATH 2417 Calculus I\textsuperscript{4, 5, 6}

or MATH 2413 Differential Calculus\textsuperscript{4, 5, 6}

Life and Physical Sciences: 6 semester credit hours

CHEM 1311 General Chemistry I\textsuperscript{4}

or CHEM 1315 Honors Freshman Chemistry I\textsuperscript{4}

CHEM 1312 General Chemistry II\textsuperscript{4}

or CHEM 1316 Honors Freshman Chemistry II\textsuperscript{4}

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

Social and Behavioral Sciences: 3 semester credit hours

Choose one of the following:\textsuperscript{7}

BA 1310 Making Choices in Free Market Systems\textsuperscript{8, 4}

BA 1320 Business in a Global World\textsuperscript{8, 4}

ECON 2301 Principles of Macroeconomics\textsuperscript{8, 4}

ECON 2302 Principles of Microeconomics\textsuperscript{8, 4}

Component Area Option: 6 semester credit hours

Choose two of the following:\textsuperscript{7}

MATH 2419 Calculus II\textsuperscript{4, 5, 9}

or MATH 2414 Integral Calculus\textsuperscript{4, 5, 9}

BA 1310 Making Choices in Free Market Systems\textsuperscript{8, 4}

BA 1320 Business in a Global World\textsuperscript{8, 4}
ECON 2301 Principles of Macroeconomics
ECON 2302 Principles of Microeconomics

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
or CHEM 1315 Honors Freshman Chemistry I
CHEM 1312 General Chemistry II
or CHEM 1316 Honors Freshman Chemistry II
CHEM 2123 Introductory Organic Chemistry Laboratory I
CHEM 2125 Introductory Organic Chemistry Laboratory II
CHEM 2323 Introductory Organic Chemistry I
CHEM 2325 Introductory Organic Chemistry II
MATH 2417 Calculus I
or MATH 2413 Differential Calculus
MATH 2419 Calculus II
or MATH 2414 Integral Calculus
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:

**BA 1310** Making Choices in Free Market Systems
or **ECON 2302** Principles of Microeconomics

**BA 1320** Business in a Global World
or **ECON 2301** Principles of Macroeconomics

**Business Core Courses: 24 semester credit hours**

**BCOM 1300** Introduction to Professionalism and Communication in Business
or **BCOM 3300** Professionalism and Communication in Business
**BCOM 4300** Managing Communications in Business
**IMS 3310** International Business
FIN 3320 Business Finance
OPRE 3310 Operations Management
ITSS 3300 Information Technology for Business
OBHR 3330 Introduction to Human Resource Management
  or OBHR 3310 Organizational Behavior
MKT 3300 Principles of Marketing

III. Elective Requirements: 21 semester credit hours

A zero semester credit hour practicum experience is required:
HMGT 4090 Healthcare Management Internship

A zero semester credit hour community engagement experience is required:
BA 4095 Social Sector Engagement and Community Outreach Practicum

Healthcare Management Core Courses: 18 semester credit hours
HMGT 3301 Introduction to Healthcare Management
HMGT 3310 Healthcare Regulatory Environment
HMGT 3311 Healthcare Accounting
HMGT 3320 Complex and Dynamic Healthcare Environment
HMGT 4321 Introduction to Healthcare Information Systems
HMGT 4395 Capstone Senior Project - Healthcare Management
  or BPS 4395 Capstone Senior Project - Business
  or ENTP 4395 Capstone Senior Project - Entrepreneurship

Biology (3 semester credit hours):
BIOL 4380 Cell and Molecular Biology Laboratory
  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. A required Major course that also fulfills a Core Curriculum requirement. Semester credit hours are counted in Core Curriculum.

5. 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.

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

7. Certain courses listed are prerequisites for major core (e.g., BA 1310 or BA 1320 or ECON 2301 for IMS 3310), major concentration, or major related courses. Choose accordingly.

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

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

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

11. JSOM freshmen are required to take BCOM 1300. Transfer students and students new to JSOM are required to take BCOM 3300.

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

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