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 (151-152 semester credit hours)\(^1, 2\)

JSOM Faculty


**Professor Emeritus:** Dale Osborne

**Clinical Professors:** John Barden, Britt Berrett, Abhijit Biswas, Ranavir Bose, Pamela Foster Brady, Shawn Carraher, Larry Chasteen, Paul Convery, David Cordell, Kutsal Dogan, Howard Dover, Forney Fleming Ill, John Gamino, Randall S. Guttery, Charles Hazzard, David Hefley, Robert Hicks, Gerald (Jerry) Hoag, Marilyn Kaplan, Ching-Chung Kuo, Sonia Leach, Peter Lewin, Jeffrey Manzi, John F. McCracken, Dennis McCuistion, Diane S. McNulty, Divakar Rajamani, Daniel Rajaratnam, David Ritchey, Rajiv Shah, Mark Thouin, Keith Thurgood, Jeff Weekley, Habte Woldu, Fang Wu, Laurie L. Ziegler

**Associate Professors:** Mehmet Ayvaci, Nina Baranchuk, Norris Bruce, Jianqing Chen, Zhonglan Dai, Rebecca Files, Xianjun Geng, J. Richard Harrison, Dorothée Honhon, Kyle Hyndman, Surya N. Janakiraman, Robert L. Kieschnick Jr., Atanu Lahiri, Jun Li, Ningzhong Li, Lívia Markóczy, Amit Mehra, Toyah Miller, Ramachandran (Ram) Natarajan, Naim Bugra Ozel, H. Dennis Park, Valery Polkovnichenko, Cuili Qian, Orlando C. Richard, Young U. Ryu, Gil Sadka, Jane Salk, Harpreet Singh, David J. Springate, Upender Subramanian, Kelsey D. Wei, Han (Victor) Xia, Jun Xia, Ying Xie, Yexiao Xu, Alejandro Zentner, Jieying Zhang, Yuan Zhang, Feng Zhao, Yibin Zhou

**Clinical Associate Professors:** Shawn Alborz, Steven Guengerich, Lale Guler, Dawn Owens, David Parks, Carolyn Reichert, Avanti P. Sethi, Kelly Slaughter, Jeanne Sluder, James Szot, McClain Watson

**Assistant Professors:** Qi (George) Chen, Khai Chiong, Emily Choi, Bernhard Ganglmair, Nathan Goldman, Ying Huang, Sora Jun, Sheen Levine, Meng Li, Xiaolin Li, Maria Loumioti, Jean-Marie Meier, Radha Mookerjee, Anany Qi, Alejandro Rivera Mesias, Alessio Saretto, Simon Siegenthaler, Serdar Simsek, Shaojie Tang, Christian Von-Drathen, Shouqiang Wang, Malcolm Wardlaw, Junfeng Wu, Steven Xiao, Shengqi Ye, Nir Yehuda, Zhe (James) Zhang, Xiaofei Zhao

**Clinical Assistant Professors:** Athena Alimirzaei, Christina (Krysta) Betanzos, Moran Blueshtein, Judd Bradbury, Jerome Gafford, Ayfer Gurun, Maria Hasenhuettl, 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


NSM Faculty

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

Professor Emeritus: Hans Bremer, Donald M. Gray

Clinical Professor: David Murchison

Associate Professors: Gail A. M. Breen, John G. Burr, Jeff L. Dejong, Heng Du, Ernest M. Hannig, Tae Hoon Kim, Dennis L. Miller, Kelli Palmer, Duane D. Winkler, Zhenyu Xuan

Assistant Professors: Zachary Campbell, Nikki Delk, Jung-whan (Jay) Kim, Faruck Morcos, Hyuntae Yoo

Research Assistant Professors: Lan Guo, Li Liu

Senior Lecturers: Irina Borovkov, Mehmet Candas, Brenna Hill, Wen-Ju Lin, Meenakshi Maitra, Robert C. Marsh, Jing Pan, Elizabeth Pickett, Ruben D. Ramirez, Scott A. Rippel, Ilya Sapozhnikov, Uma Srikanth, Michelle Wilson, Wen-Ho Yu

I. Core Curriculum Requirements: 42 semester credit hours

Communication: 6 semester credit hours

COMM 1315 Public Speaking

or COMM 1311 Survey of Oral and Technology-based Communication

RHET 1302 Rhetoric

Mathematics: 3 semester credit hours

MATH 2417 Calculus I

or MATH 2413 Differential Calculus

Life and Physical Sciences: 6 semester credit hours

CHEM 1311 General Chemistry

or CHEM 1315 Honors Freshman Chemistry

CHEM 1312 General Chemistry II

or CHEM 1316 Honors Freshman Chemistry II

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 course from the following:
BA 1310 Making Choices in Free Market Systems
BA 1320 Business in a Global World
ECON 2301 Principles of Macroeconomics
ECON 2302 Principles of Microeconomics

Component Area Option: 6 semester credit hours
Choose two courses from the following:
MATH 2419 Calculus II
or MATH 2414 Integral Calculus
BA 1310 Making Choices in Free Market Systems
BA 1320 Business in a Global World
ECON 2301 Principles of Macroeconomics
ECON 2302 Principles of Microeconomics

II. Major Requirements: 91-92 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 2123 Introductory Organic Chemistry Laboratory I\(^4\)
CHEM 2125 Introductory Organic Chemistry Laboratory II\(^4\)
CHEM 2323 Introductory Organic Chemistry I\(^4\)
CHEM 2325 Introductory Organic Chemistry II\(^4\)
MATH 2417 Calculus I\(^5,\_6\)
  or MATH 2413 Differential Calculus\(^5,\_6,\_7\)
MATH 2419 Calculus II\(^5,\_6\)
  or MATH 2414 Integral Calculus\(^5,\_6,\_7\)
PHYS 2325 Mechanics\(^5\) and PHYS 2125 Physics Laboratory I
  or PHYS 2421 Honors Physics I - Mechanics and Heat\(^5,\_9\)
PHYS 2326 Electromagnetism and Waves\(^5\)
  or PHYS 2422 Honors Physics II - Electromagnetism and Waves\(^5\)
PHYS 2126 Physics Laboratory II

**Biology Core Courses: 33 semester credit hours**

BIOL 2111 Introduction to Modern Biology Workshop I\(^4\)
BIOL 2112 Introduction to Modern Biology Workshop II\(^4\)
BIOL 2281 Introductory Biology Laboratory\(^4\)
BIOL 2311 Introduction to Modern Biology I\(^4\)
BIOL 2312 Introduction to Modern Biology II\(^4\)
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
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
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

Business Core Courses: 26 semester credit hours

BA 1100  Business Basics and HMG 3100  Professional Development
   or HMG 3200  Introduction to Business and Professional Development
BCOM 3310  Business Communication
BCOM 4350  Advanced Business Communication
FIN 3320  Business Finance
IMS 3310  International Business
ITSS 3300  Information Technology for Business
OPRE 3310  Operations Management
OBHR 3330  Introduction to Human Resource Management
   or OBHR 3310  Organizational Behavior
MKT 3300  Principles of Marketing

III. Elective Requirements: 18 semester credit hours
A zero semester credit hour practicum experience is required:
   HMG 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: 15 semester credit hours

- **HMGT 3301** Introduction to Healthcare Management
- **HMGT 3311** Healthcare Accounting
- **HMGT 4321** Introduction to Healthcare Information Systems
- **HMGT 3310** Healthcare Regulatory Environment
- **HMGT 4380** Capstone in Healthcare Management

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 152-153 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 substitute MATH 2413 and MATH 2414 by taking MATH 2417 and MATH 2419.
8. Certain courses listed are prerequisites for major core (e.g., BA 1320 or ECON 2301 for IMS 3310), major concentration, or major related courses. Choose accordingly.
9. Students who complete PHYS 2421 do not need to complete PHYS 2125.
10. JSOM freshmen are required to take BA 1100 and HMGT 3100. Transfer students and students new to JSOM are required to take HMGT 3200.
11. Requires permission of the Biology Undergraduate Advisor to ensure training in recombinant DNA analysis.

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