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)\textsuperscript{1,2}

JSOM Faculty


\textbf{Professor Emeritus:} Dale Osborne


\textbf{Associate Professors:} 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

\textbf{Clinical Associate Professors:} Steven Guengerich, Lale Guler, David Parks, Carolyn Reichert,
Avanti P. Sethi, Kelly Slaughter, Jeanne Sluder, James Szot, McClain Watson

**Assistant Professors:** Mehmet Ayvaci, 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, Anyan 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:** Shawn Alborz, Athena Alimirzaei, Christina (Krysta) Betanzos, Moran Blueshtein, Judd Bradbury, Jerome Gafford, Ayfer Gurun, Maria Hasenzhutl, Julie Haworth, Jeffery (Jeff) Hicks, Revansiddha Khanapure, Kristen Lawson, Kathryn Lookadoo, Liping Ma, Sarah Moore, Ravi Narayan, Dawn Owens, Parneet Pahwa, Jason Parker, Drew Peabody, Nassim Sohaee

**Senior Lecturers:** Semiramis Amirpour, Frank Anderson, Vivek Arora, Tiffany A. Bortz, Richard Bowen, Monica E. Brussolo, Juliann Chapman, George DeCourcy, Eugene (Gene) Deluke, Alexander Edsel, Amal El-Ashmawi, Carol Flannery, Mary Beth Goodrich, Thomas (Tom) Henderson, Jennifer G. Johnson, Jackie Kimzey, Chris Linsteadt, Joseph Mauriello, Victoria D. McCrady, Edward Meda, Robert (Stephen) Molina, Prithi Narasimhan, Mohammad Naseri Taheri, Madison Pedigo, Matt Polze, James Richards, Debra Richardson, Anindita Roy Bardhan, Kashif Saeed, Margaret Smallwood, Steven Solcher, Luell (Lou) Thompson, Amy L. Troutman, Robert Wright, Kathy Zolton, Hubert Zydorek

**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, Ernest M. Hannig, Tae Hoon Kim, Dennis L. Miller, Kelli Palmer, Zhenyu Xuan

**Assistant Professors:** Zachary Campbell, Nikki Delk, Heng Du, Jung-whan (Jay) Kim, Faruck Morcos, Duane D. Winkler, 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 Srikant, Michelle Wilson, Wen-Ho Yu

I. Core Curriculum Requirements: 42 semester credit hours³

**Communication: 6 semester credit hours**

COMM 1315 Public Speaking

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or **COMM 1311** Survey of Oral and Technology-based Communication

**RHET 1302** Rhetoric

Mathematics: 3 semester credit hours

**MATH 2417** Calculus I\(^5, 6\)

or **MATH 2413** Differential Calculus\(^5, 6, 7\)

Life and Physical Sciences: 6 semester credit hours

**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\(^5\)

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:\(^8\)

**BA 1310** Making Choices in Free Market Systems\(^4, 5\) (Awaiting Core Approval from THECB)

**BA 1320** Business in a Global World\(^4, 5\)

**ECON 2301** Principles of Macroeconomics\(^4, 5\)

**ECON 2302** Principles of Microeconomics\(^4, 5\)

Component Area Option: 6 semester credit hours
Choose two courses from the following:

**MATH 2419** Calculus II\(^5, 6, 7\)

or **MATH 2414** Integral Calculus\(^5, 6, 7\)

**BA 1310** Making Choices in Free Market Systems\(^4, 5\) (Awaiting Core Approval from THECB)

**BA 1320** Business in a Global World\(^4, 5\)

**ECON 2301** Principles of Macroeconomics\(^4, 5\)

**ECON 2302** Principles of Microeconomics\(^4, 5\)

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\(^8, 9\)

**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

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

BA 1310 Making Choices in Free Market Systems (Awaiting Core Approval from THECB)

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 **HMGT 3100** Professional Development
- or **HMGT 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:

- **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: 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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