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, Zhonglan Dai, Rebecca Files, Dorothée Honhon, Bin Hu, Surya N. Janakiraman, Robert L. Kieschnick Jr., Atanu Lahiri, Jun Li, Ningzhong Li, Maria Loumioti, Lívia Markóczy, Toyah Miller, Ramachandran (Ram) Natarajan, Naim Bugra Özel, H. Dennis Park, Anyan Qi, Young U. Ryu, Harpreet Singh, David J. Springate, Upender Subramanian, Shaojie Tang, Shouqiang Wang, Kelsey D. Wei, Han (Victor) Xia, Yexiao Xu, Alejandro Zentner, Jieying Zhang, Yuan Zhang, Feng Zhao, Yibin Zhou

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

**Professor Emeritus:** John J. Wiorkowski

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

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

**Clinical Associate Professors:** Shawn Alborz, Dawn Owens, Carolyn Reichert, Avanti P. Sethi, Ramesh
Subramoniam, Aysegul Toptal, David Widdifield

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

Professors of Instruction: Semiramis Amirpour, Charles Hazzard, Luell (Lou) Thompson

Associate Professors of Instruction: Ayfer Gurun, Maria Hasenhuttl, Mohammad Naseri Taheri

Assistant Professors of Instruction: Negin Enayaty Ahangar, Julie Haworth, Rasoul Ramezani, Gaurav Shekhar

Professors of Practice: Ranavir Bose, Rajiv Shah

Associate Professor of Practice: David Parks

Assistant Professors of Practice: Abu Naser Islam, Scott Janke, Timothy Stephens

Senior Lecturers: Khatereh Ahadi, Tiffany A. Bortz, Richard Bowen, Monica E. Brussolo, Juliann Chapman, George DeCourcy, Alexander Edsel, Amal El-Ashmawi, 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, Madison Pedigo, Matt Polze, Margaret Smallwood, Steven Solcher, Guido Tirone, Robert Wright, Kathy Zolton, Hubert Zydorek

NSM Faculty

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

Associate Professors: John G. Burr, 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, Jyoti Misra

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 Candas, Wen-Ju Lin, Elizabeth Pickett, Ilya Sapozhnikov, Michelle Wilson

Assistant Professors of Instruction: Ida Klang, Meenakshi Maitra, Caitlin Maynard, Iti Mehta, 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\textsuperscript{4, 5, 6, 7, 8}
or MATH 2413 Differential Calculus\textsuperscript{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 I\textsuperscript{5}
or CHEM 1315 Honors Freshman Chemistry I\textsuperscript{5}
CHEM 1312 General Chemistry II\textsuperscript{5}
or CHEM 1316 Honors Freshman Chemistry II\textsuperscript{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:\textsuperscript{2}
BA 1310 Making Choices in Free Market Systems\textsuperscript{4, 5}
BA 1320 Business in a Global World\textsuperscript{4, 5}
ECON 2301 Principles of Macroeconomics\textsuperscript{4, 5}
ECON 2302 Principles of Microeconomics

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

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

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

CHEM 1112 General Chemistry Laboratory II

CHEM 1311 General Chemistry I

CHEM 1312 General 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

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 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 4
ACCT 2302 Introductory Management Accounting 4
BLAW 2301 Business and Public Law 4
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 BCOMM 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 practicum experience of at least 160 working hours is required:

HMGT 4090 Healthcare Management Internship

BA 4090 Management Internship

A 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 Financial Analysis

HMGT 3320 Complex and Dynamic Healthcare Environment
or ECON 3330 Economics of Health

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. 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.

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