**UMBC UGC Program Changes & Other Request:** Minor in Entrepreneurship and Innovation

Date Submitted: 3/3/2020 Proposed Effective Date: 3/10/2020

| | Name | Email | Phone | Dept |
|---|---|---|---|---|
| Program Director | George Karabatis | georgeK@umbc.edu | 53940 | Information Systems |
| Other Contact | Stephen Miller | stmiller@umbc.edu | 53381 | Biology |

**Specifics (see instructions):**
Students must complete four elective courses. At least six credits must be at the 300- or 400-level

| **Current ENTR minor electives:** | | **Proposed ENTR minor electives:** | |
|---|---|---|---|
| AFST 385 | Problem Solving in the Urban Black Community | AFST 385 | Problem Solving in the Urban Black Community |
| AGING 361 | Technology for Management of Aging Services | AGING 361 | Technology for Management of Aging Services |
| AMST 422 | Preserving Places, Making Spaces in Baltimore | AMST 422 | Preserving Places, Making Spaces in Baltimore |
| AMST/POLI/SOCI 205 | Civic Agency and Social Entrepreneurship | AMST/POLI/SOCI 205 | Civic Agency and Social Entrepreneurship |
| ART 319 | Space and Place in Public Art and Urbanism | ART 319 | Space and Place in Public Art and Urbanism |
| ART 322 | Social Entrepreneurship in Place | ART 322 | Social Entrepreneurship in Place |
| ART 339 | Design Thinking for the Social Entrepreneur | ART 339 | Design Thinking for the Social Entrepreneur |
| ART 341 | Introduction to Animation | ART 341 | Introduction to Animation |
| ART 427/691 | Museum Practice | ART 427/691 | Museum Practice |
| ART 462 | Entrepreneurial Practices in Photography | ART 462 | Entrepreneurial Practices in Photography |
| BIO 306L | Projects in Synthetic Molecular Biology | BIO 306L | Projects in Synthetic Molecular Biology |
| BIOL 412 | Microbial Systems and Synthetic Biology | BIOL 412 | Microbial Systems and Synthetic Biology |
| BIOL 420 | Advanced Topics in Cell Biology | BIOL 420 | Advanced Topics in Cell Biology |
| BIO 414 | Eukaryotic Molecular Genetics | BIOL 421 | Topics in Molecular Genetics |
| CHEM 311L | Advanced Laboratory I | BIOL 422L | Microscopy & Imaging Techniques |
| CHEM 405L | Advanced Inorganic Chemistry Laboratory | BIO 414 | Eukaryotic Molecular Genetics |
| CMPE 349 | Introduction to Professional Practice | CHEM 311L | Advanced Laboratory I |

| | |
|---|---|
| CMPE 450 | Capstone I |
| CMPE 451 | Capstone II |
| ECON 101 | Principles of Microeconomics |
| ECON 374 | Financial Management |
| ECON 408 | Managerial Economics |
| ECON 418 | The Economics of Innovation and Technology |
| ECON 467 | Health Economics |
| ECON 476 | Portfolio Analysis & Mgmt |
| ECON 479 | Venture Capital and Capital Market Imperfections |
| ECON 482 | International Finance |
| ENCH 225L | Chemical Engineering Problem Solving and Experimental Design Lab |
| ENCH 486 | A Survey of Sensors & Instrumentation |
| ENME 204 | Introduction to Mechanical Engineering Design with CAD |
| ENME 408 (formerly ENME 489) | Special Topics: Global Engineering |
| ENME 444 | Mechanical Engineering Systems Design Capstone |
| FYS 102 | Creativity, Innovation and Invention |
| GWST 200 | Studies in Feminist Activism |
| HAPP/SOCY 354 | Social Bases of Public and Community Health |
| HIST 206 (formerly HIST 200) | Themes in World History: Entrepreneurship in the Early Modern World |
| HIST 311 | American Entrepreneurs from Columbus to Jobs |
| HIST 411 | Service Learning in Public History |

| | |
|---|---|
| CHEM 405L | Advanced Inorganic Chemistry Laboratory |
| CMPE 349 | Introduction to Professional Practice |
| CMPE 450 | Capstone I |
| CMPE 451 | Capstone II |
| ECON 101 | Principles of Microeconomics |
| ECON 374 | Financial Management |
| ECON 408 | Managerial Economics |
| ECON 418 | The Economics of Innovation and Technology |
| ECON 467 | Health Economics |
| ECON 476 | Portfolio Analysis & Mgmt |
| ECON 479 | Venture Capital and Capital Market Imperfections |
| ECON 482 | International Finance |
| ENCH 225L | Chemical Engineering Problem Solving and Experimental Design Lab |
| ENCH 486 | A Survey of Sensors & Instrumentation |
| ENME 204 | Introduction to Mechanical Engineering Design with CAD |
| ENME 408 (formerly ENME 489) | Special Topics: Global Engineering |
| ENME 444 | Mechanical Engineering Systems Design Capstone |
| FYS 102 | Creativity, Innovation and Invention |
| GWST 200 | Studies in Feminist Activism |
| HAPP/SOCY 354 | Social Bases of Public and Community Health |
| HIST 206 (formerly HIST 200) | Themes in World History: Entrepreneurship in the Early Modern World |

| | |
|---|---|
| INDS 430 | Kinetic Sculpture Project |
| IS 320 | Advanced Business Applications |
| IS 420 | Database Application Development |
| IS 428 | Data Mining Techniques & Application |
| IS 448 | Markup and Scripting Languages |
| MCS 355 | Social Media: Networking and Mobility |
| MCS 377 | Desktop Publishing and the Web |
| MGMT 210 | The Practice of Management |
| MGMT 310 | Human Resource Management |
| MUSC 323 | Career Development for Musicians |
| THTR 345 | Auditioning and the Business of Acting |
| THTR 460 | Theatre Capstone |

| | |
|---|---|
| HIST 311 | American Entrepreneurs from Columbus to Jobs |
| HIST 411 | Service Learning in Public History |
| INDS 430 | Kinetic Sculpture Project |
| IS 320 | Advanced Business Applications |
| IS 420 | Database Application Development |
| IS 428 | Data Mining Techniques & Application |
| IS 448 | Markup and Scripting Languages |
| MCS 355 | Social Media: Networking and Mobility |
| MCS 377 | Desktop Publishing and the Web |
| MGMT 210 | The Practice of Management |
| MGMT 310 | Human Resource Management |
| MUSC 323 | Career Development for Musicians |
| THTR 345 | Auditioning and the Business of Acting |
| THTR 460 | Theatre Capstone |

**Rationale (see instructions):**

BIOL 421 is a seminar-style, upper level Biology major elective (4 credits) that is taken by students who have completed the Biology major core. It teaches Entrepreneurial concepts and skills such as critical thinking, teamwork, and oral and effective oral and written communication skills, and contains an Entrepreneurial component that includes multiple class sessions devoted to learning how to develop a commercialization plan, and guided training toward the completion of a commercialization plan project.

BIOL 422L is a laboratory course that teaches the theory and practice of contemporary imaging techniques for Biological and Materials Sciences and fulfills one of the upper-level lab requirements for Biology BA and BS students. Some lecture content and the final project focus on entrepreneurship and innovation in microscopy and 3D printing. BIOL 422L is a two-credit course but students who wish to use it as an ENTR minor elective will also complete 1 credit of BIOL 399 (Tutorial Projects in Biological Sciences) that will involve writing a 10-page market survey on their microscopy project.

We are asking that students be allowed to use BIOL 421 and BIOL422L electives toward completion of the ENTR minor, as both courses meet the requirements of the Alex. Brown Center for Entrepreneurship. Currently there are over 1500 BIOL majors, but there are only three upper level BIOL courses that can serve as ENTR minor electives. It is important that more students be encouraged to learn Entrepreneurship principles, and providing more opportunities to complete ENTR electives that also satisfy BIOL major requirements will encourage more of our majors to complete the ENTR minor.

UMBC

Nichole Zang Do <nzang1@umbc.edu>

# BIOL 421 and BIOL 422L in the ENTR minot

1 message

**Philip Farabaugh** <farabaug@umbc.edu> Tue, Mar 10, 2020 at 3:29 PM
To: George Karabatis <georgek@umbc.edu>
Cc: Nichole Zang Do <zang.do@umbc.edu>, Stephen Miller <stmiller@umbc.edu>

George,

I'm writing to express my strong support for the use of BIOL 421 and BIOL 422L as part of the ENTR minor program.

Phil


Philip Farabaugh
Professor & Chair
Department of Biological Sciences
University of Maryland Baltimore County
1000 Hilltop Circle
Baltimore, MD 21250
Office: +1-410-455-3018
Lab: +1-410-455-2659
Webpage: http://bit.ly/farabaugh