



**FLORIDA  
ATLANTIC  
UNIVERSITY**

## NEW/CHANGE PROGRAM REQUEST Graduate Programs

**Department** Biological Science

**College** Charles E Schmidt College of Science

UGPC Approval \_\_\_\_\_

UFS Approval \_\_\_\_\_

Banner \_\_\_\_\_

Catalog \_\_\_\_\_

**Program Name**

Business Biotechnology  
Professional Science Masters

☐ **New Program\***

☒ **Change Program\***

**Effective Date**

(TERM & YEAR)

Fall 2023

**Please explain the requested change(s) and offer rationale below or on an attachment.**

Professional Science Masters (Business Biotechnology)

Update Science Courses

Update Business Courses

\*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.

**Faculty Contact/Email/Phone**

Dr. David Binninger/binninge@fau.edu. 561-297-3323

**Consult and list departments that may be affected by the change(s) and attach documentation**

College of Business  
College of Medicine and Chemistry Department

**Approved by**

Department Chair

College Curriculum Chair

College Dean

UGPC Chair

UGC Chair

Graduate College Dean

UFS President

Provost

**Date**

2-8-23

2/14/2023

Email this form and attachments to [UGPC@fau.edu](mailto:UGPC@fau.edu) 10 days before the UGPC meeting.

## Professional Science Master with Major in Business Biotechnology

**Application Deadline: Spring term - October 1; Fall term - January 15**

The Professional Science Master's Degree (P.S.M.) with major in Business Biotechnology is a terminal degree for students interested in entering the workforce directly following completion of the degree. The 34-credit program is tailored for the student with undergraduate training in biology or chemistry who is primarily interested in working in the business side of the emerging biotechnology and pharmaceutical industries. This interdisciplinary program, provided in conjunction with the College of Business, includes traditional classroom courses in both business and science, culminating in two internship experiences. One internship provides experience working side-by-side with a research scientist. The second internship exposes the student to the business side of the biotechnology industry.

### Departmental Admission Requirements

1. Baccalaureate degree in biology or chemistry. Degrees in other scientific areas can be considered on an individual basis;
2. Graduating undergraduate science GPA of 3.0 or higher;
3. Minimum scores of 151 (verbal) and 148 (quantitative) on the GRE. GRE scores more than five years old will not be accepted;
4. Personal statement of career goals and how the applicant feels this training will help achieve those goals;
5. Three letters of recommendation with at least one from a former professor;
6. [Graduate Student Biology Faculty Advisor Verification](#) form;
7. Approval of the Department of Biological Sciences.

### Degree Requirements

The program requires a total of 34 credits. Student curriculum degree requirements include:

Core Courses (10 credits required)		
Venture Creation	ENT 6016	3
Biotechnology Business Development	ENT 6196	3
Professional Science Master's (P.S.M.) in Business Biotechnology - Scientific Internship	BSC 6946	2
Professional Science Master's (P.S.M.) in Business Biotechnology - Business Internship	MAN 6946	2

\* Each internship will last one semester. One internship will be science oriented with the student working directly with research scientists. The second will involve working on the business and administrative side of the company or institute, including technology transfer and business development offices. The goal is to place students in one of the biomedical institutes (e.g., Scripps Florida and the Max Planck Institute) or an emerging biotechnology business.

Science Courses (select 15 credits from the list below. May require instructor permission or prerequisites)**		
Biochemistry of the Gene	BCH 5415	3
Advanced Biochemistry	BCH 6740	3
Practical Cell Neuroscience	BSC 6417C	3
Computer Graphics for Biologists	BSC 6455	3

Bioinformatics	BSC 6458C	4
Lab Methods in Biotechnology	BSC 6408L	3
Scientific Communication (Note: Priority enrollment given to Integrative Biology Ph.D. students)	BSC 6846	3
Special Topics	BSC 6936	1-4
Advanced Molecular Genetics of Aging	PCB 5245	3
Advanced Genetics Lab	PCB 5064L	3
Genes and Development	PCB 6595	3
Climate Change: Ecosystem to Human Health	PCB 6409	3
Advanced Cell Physiology	PCB 6207	3
Advanced Immunology	PCB 6236	3
RNS Biology and Disease	PCB 6525	3
Reproductive Endocrinology	PCB 6804	3
Advanced Neurophysiology Lab	PCB 6837L	3
Cellular Neuroscience and Disease	PCB 6849	3
Special Topics, including Macromolecular Structure and Function and Protein Misfolding and Disease (3 credits each)	PCB 6933	6
Principles of Neuroscience	PSB 6037	3
Developmental Neurobiology	PSB 6515	3
Human Neuroanatomy	ZOO 6748	3
Advanced Biochemistry ( Remove Duplicate course)	BCH 6740	3
Structural Biochemistry	CHM 6351	3
Instrumentation	CHM 6157	3
Macromolecules and Human Disease	GMS 6301	3
Host Defense and Inflammation	MCB 6208	3
Advanced Molecular and Cell Biology	PCB 5532	3
Human Genetics	PCB 6665	3
Autonomic Function and Diseases	BMS 6523	3
Molecular Basis of Disease and Therapy	GMS 6302	3
Neurobiology of Addiction	PCB 5844	3
Molecular Basis of Human Cancer	PCB 6235	3
Problem-Based Immunology	PCB 6238	3
Tumor Immunology	PCB 6239	3
Adult Neurogenesis	PCB 6846	3
Advanced Plant Biotechnology	BOT 6735C	3
Neurophysiology	PCB 6835C	3
Advanced Drug Development	CHM 6277C	3



Advanced Drug Formulation	CHM 6279C	3
Drug Design	CHM 6278	3
Special Topics	ISC 6930	1-3
Advanced Topics in Organic Chemistry	CHM 6380	3
Advanced Topics in Biochemistry	BCH 6930	3
Pharmacology	GMS 6513	3
Special Topics	PCB 6933	1-8
Brain Diseases: Mechanism and Therapy	BMS 6736	3

\*\* The science courses are

electives, and their selection will vary depending on student demand, resources, faculty and new courses being developed. The list of science courses above would be appropriate for a student in this program. Other science courses can be substituted taken as science electives with the approval of the faculty advisor.

Business Courses (9 credits required, choose from list below))		
Financial Accounting Concepts	ACG 6027	3
Technology Commercialization Strategies	ENT 6186	3
Developing and Marketing Innovations	MAR 6837	3
Advanced Marketing Management	MAR 6815	3
Marketing Functions/Processes	MAR 6055	3
Entrepreneurship and Venture Capital	ENT 6428	3
Leadership and Organizations	MAN 6296	3
Human Resources Management	MAN 6156	3
Advanced Business Plan Development	ENT 6116	3
Cross Cultural Management	MAN 6609	3
Project Management	MAN 6581	3

**Important comment about courses.** The list of business courses shown above reflect those currently listed in the University Catalog. Availability will vary depending on the offerings in each department. New courses may have been added since this information was published. Appropriate business courses substitutions can be taken as business electives with the approval of the student's graduate program advisor.

For additional information about this degree program, contact David Binninger, [binninge@fau.edu](mailto:binninge@fau.edu).

**From:** David Binninger <binninge@fau.edu>  
**Sent:** Monday, February 28, 2022 12:04 PM  
**To:** Roland Kidwell <kidwellr@fau.edu>  
**Cc:** Rebecca Dixon <rdixon@fau.edu>  
**Subject:** Re: Course Approval Request

Hi Roland,

Thank you for your quick response. Telling me which department teaches each course is very helpful.

Thanks again,  
David

David Binninger, PhD  
Associate Professor and Associate Chair  
Biological Sciences Department  
and  
Center for Molecular Biology and Biotechnology  
Charles E Schmidt College of Science  
Florida Atlantic University  
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(561) 297-3323

On Feb 28, 2022, at 8:34 AM, Roland Kidwell <[kidwellr@fau.edu](mailto:kidwellr@fau.edu)> wrote:

I can approve ENT 6116 and MAN 6609. The others are housed in other COB departments, MAR 6933 (marketing), MAN 6581 (ITOM), ACG 6935 (accounting).

**From:** David Binninger  
**Sent:** Monday, February 28, 2022 8:10 AM  
**To:** Roland Kidwell <[kidwellr@fau.edu](mailto:kidwellr@fau.edu)>  
**Cc:** Rebecca Dixon <[rdixon@fau.edu](mailto:rdixon@fau.edu)>  
**Subject:** Course Approval Request

Good morning Roland,

We are updating the course listings for our Professional Science Masters (PSM) in business biotechnology. I would appreciate if you would approve addition of the business courses shown below to the course description. Please let me know if you have questions.

Thanks,  
David

Business College Courses

Advanced Business Plan Development	ENT 6116	3
Cross Cultural Management	MAN 6609	3

Special Topics	MAR 6933	1-3
Project Management	MAN 6581	3
Special Topics	ACG 6935	1-3

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 Biological Sciences Department  
 and  
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**From:** Tamara Dinev <tdinev@fau.edu>  
**Sent:** Thursday, July 14, 2022 1:39 PM  
**To:** David Binninger <binninge@fau.edu>  
**Cc:** Rebecca Dixon <rdixon@fau.edu>  
**Subject:** RE: Course Registration

Yes, David, thank you for reaching to us.

ITOM approves adding MAN 6581 to your program

Best Regards:

Tamara

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Tamara Dinev, Ph.D., Department Chair and Professor  
Department of Information Technology and Operations Management, FL 219  
College of Business, Florida Atlantic University  
Boca Raton, Florida 33431  
Google Scholar: <https://scholar.google.com/citations?user=YH8QZ-YAAAAJ&hl=en>

**From:** Andrew Terentis <terentis@fau.edu>  
**Sent:** Thursday, March 3, 2022 9:32 AM  
**To:** David Binninger <binninge@fau.edu>  
**Cc:** Rebecca Dixon <rdixon@fau.edu>  
**Subject:** RE: Course Approval Request

Dear David,

We have no objections. You have our approval.

Best,  
Andrew

**From:** David Binninger  
**Sent:** Monday, February 28, 2022 8:14 AM  
**To:** Andrew Terentis <terentis@fau.edu>  
**Cc:** Rebecca Dixon <rdixon@fau.edu>  
**Subject:** Course Approval Request

Good morning,

We are updating the course listings for our Professional Science Masters (PSM) in business biotechnology. I would appreciate if you would approve addition of the chemistry courses shown below to the course description. Please let me know if you have questions.

Thanks,  
David

Chemistry

Advanced Drug Development	CHM 6277C	3
Advanced Drug Formulation	CHM 6279C	3
Drug Design	CHM 6278	3
Special Topics	ISC 6930	1-3
Advanced Topics in Organic Chemistry	CHM 6380	3
Advanced Topics in Biochemistry	CHM 5224	3

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**From:** David Binninger <binninge@fau.edu>  
**Sent:** Tuesday, March 1, 2022 12:13 PM  
**To:** Marc Kantorow <MKANTORO@health.fau.edu>  
**Cc:** Rebecca Dixon <rdixon@fau.edu>  
**Subject:** Re: Course Approval Request

Hi Marc,

Thank you for your amazingly quick response. Please let me know when new courses are being offered that you feel would be of interest to our students.

Take care,  
David

David Binninger, PhD  
Associate Professor and Associate Chair  
Biological Sciences Department  
and  
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On Mar 1, 2022, at 10:20 AM, Marc Kantorow <[MKANTORO@health.fau.edu](mailto:MKANTORO@health.fau.edu)> wrote:

Hi David,

The GSPC and Instructors have approved listing the following courses as electives for your Professional Science Masters (PSM) Program.

Pharmacology	GMS 6513	3
Brain Diseases: Mechanism and Therapy	BMS 6736	3
Special Topics	PCB 6933	1-8

All the best,

Marc

Marc Kantorow PhD, FARVO  
Associate Dean for Graduate Programs  
Professor of Biomedical Science  
Charles E. Schmidt College of Medicine  
Florida Atlantic University  
Boca Raton, FL USA 33431  
[mkantoro@health.fau.edu](mailto:mkantoro@health.fau.edu)  
561-297-2910

**From:** David Binninger <[binninge@fau.edu](mailto:binninge@fau.edu)>  
**Date:** Monday, February 28, 2022 at 11:54 AM  
**To:** Marc Kantorow <[MKANTORO@health.fau.edu](mailto:MKANTORO@health.fau.edu)>  
**Cc:** Rebecca Dixon <[rdixon@fau.edu](mailto:rdixon@fau.edu)>  
**Subject:** Re: Course Approval Request

Hi Marc,

Thank you for your prompt response and assistance. None of the requested courses would be required. I encourage students to consider courses offered by biomedical sciences as electives for their program. I appreciate the information concerning Radiation Biology. We will delete it from the list and then reconsider if it is offered regularly at some point in the future. Students in the program are used to asking for instructor permission for courses outside CESCOS. Let me know if you have any additional questions.

Thanks again,  
David

David Binninger, PhD  
Associate Professor and Associate Chair  
Biological Sciences Department  
and  
Center for Molecular Biology and Biotechnology  
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On Feb 28, 2022, at 11:06 AM, Marc Kantorow <[MKANTORO@health.fau.edu](mailto:MKANTORO@health.fau.edu)> wrote:

Hi David,

Hope all is well and happy to help. I will submit your request to our GSPC Committee for approval.

The Committee will need to know if you requesting these courses to be listed as electives or requirements?

Please note that Intro to Radiation Biology BSC 6834 has not been taught for a long time and we don't anticipate its reoffering in the near future.

Please also note that these courses require permission of instructor for registration.

Look forward to hearing from you soon!

All the best,

Marc

MARC KANTOROW, PhD, FRCGS  
Associate Dean for Graduate Programs  
Professor of Biomedical Science  
Charles E. Schmidt College of Medicine  
Florida Atlantic University  
Boca Raton, FL USA 33431  
[mkantoro@health.fau.edu](mailto:mkantoro@health.fau.edu)  
561-297-2910

**From:** Janet Robishaw <[jrobishaw@health.fau.edu](mailto:jrobishaw@health.fau.edu)>  
**Date:** Monday, February 28, 2022 at 9:51 AM  
**To:** Marc Kantorow <[MKANTORO@health.fau.edu](mailto:MKANTORO@health.fau.edu)>  
**Subject:** FW: Course Approval Request

Forwarding to you for decision

Best,

Janet

Janet Robishaw, PhD  
Senior Associate Dean for Research  
Professor and Chair, Department of Biomedical Science  
Charles E. Schmidt College of Medicine  
Florida Atlantic University  
777 Glades Road, BC71-34  
Boca Raton, FL 33431  
(561) 297-4399  
[jrobishaw@health.fau.edu](mailto:jrobishaw@health.fau.edu)

<image001.jpg>

**From:** David Binninger <[binninge@fau.edu](mailto:binninge@fau.edu)>  
**Sent:** Monday, February 28, 2022 8:22 AM  
**To:** Janet Robishaw <[jrobishaw@health.fau.edu](mailto:jrobishaw@health.fau.edu)>  
**Cc:** Rebecca Dixon <[rdixon@fau.edu](mailto:rdixon@fau.edu)>  
**Subject:** Course Approval Request

Good morning Janet,

We are updating the course listings for our Professional Science Masters (PSM) in business biotechnology. I would appreciate if you would approve addition of the biomedical courses shown below to the course description. Alternatively, please forward this email to the appropriate person. Please let me know if you have questions.

Thanks,  
David

College of Medicine

Pharmacology	GMS 6513	3
Introduction to Radiation Biology	BSC 6834	3

Brain Diseases: Mechanism and Therapy	BMS 6/30	3
Special Topics	PCB 6933	1-8

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<Dr. Benninger PSM Approval.pdf>