

Date Submitted: 11/13/18 9:32 am

Viewing: **NANO-M : Nanotechnology Minor**

Last approved: 05/25/17 4:28 pm

Last edit: 11/30/18 10:57 am

Changes proposed by: mzou

Catalog Pages Using
this Program

[Nanotechnology.\(NANO\)](#)

Submitter: User ID: **mzou calison** Phone:
575-6671 575-6731

Program Status Active

Academic Level Undergraduate

Type of proposal Minor

Select a reason for this modification

Deleting Certificate, Degree, Option or Organizational Unit—(LON)

Effective Catalog Year Fall 2019

College/School Code
Provost's Office(PROV)

Department Code
PROV

Program Code NANO-M

Degree Minor

CIP Code

In Workflow

1. **PROV Dean Initial**
2. **Director of Program Assessment and Review**
3. **Registrar Initial**
4. **Institutional Research**
5. **PROV Chair**
6. **PROV Dean**
7. **Global Campus**
8. **Provost Review**
9. **University Course and Program Committee**
10. Faculty Senate
11. Provost Final
12. ADE Licensure Approval
13. Provost's Office-- Notification of Approval
14. Registrar Final
15. Catalog Editor Final

Approval Path

1. 11/30/18 9:36 am
Terry Martin (tmartin): Approved for PROV Dean Initial
2. 11/30/18 10:04 am
Alice Griffin (agriffin): Approved for Director of Program

Assessment and
Review

3. 11/30/18 10:58 am
Lisa Kulczak
(lkulcza): Approved
for Registrar Initial
4. 12/06/18 1:23 pm
Gary Gunderman
(ggunderm):
Approved for
Institutional
Research
5. 12/07/18 9:38 am
Terry Martin
(tmartin): Approved
for PROV Chair
6. 12/07/18 9:38 am
Terry Martin
(tmartin): Approved
for PROV Dean
7. 12/07/18 10:09 am
Leigh Ann Marshall
(lamarsh): Approved
for Global Campus
8. 12/12/18 3:18 pm
Terry Martin
(tmartin): Approved
for Provost Review

History

1. Jun 10, 2015 by
Charlie Alison
(calison)
2. Aug 18, 2015 by Lisa
Kulczak (lkulcza)
3. May 25, 2017 by
Lisa Kulczak (lkulcza)

14.1801 - Materials Engineering.

Program Title

Nanotechnology Minor

Program Delivery

Method

On Campus

Is this program interdisciplinary?

No

Does this proposal impact any courses from another College/School?

No

What are the total **15**
hours needed to
complete the
program?

Program Requirements and Description

Requirements

Requirements for the Nanotechnology Minor

Students wishing to participate in the Nanotechnology minor must declare participation formally. The students are required to meet with the faculty coordinator of an individual department who will help the student to develop a list of courses suitable for the minor and a schedule for taking those courses. Examples of model programs for each participating department are given below.

Students need to take a total of 15 credit hours, which includes 6 credit hours of required courses and 9 credit hours of elective courses and must earn a grade of "C" or better for all courses used to fulfill the requirements of the Nanotechnology minor.

Required Courses (6 hours)

Nanotechnology Laboratory

3

[BENG 4753L](#)

Nanotechnology Laboratory

or [BENG 4753M](#)

Honors Nanotechnology Laboratory

[BMEG 4103L](#)

Nanotechnology Laboratory

or [BMEG 4103M](#)

Honors Nanotechnology Laboratory

[CHEM 4153L](#)

Nanotechnology Laboratory

or [CHEM 4153M](#)

Honors Nanotechnology Laboratory

[MEEG 4323L](#)

Nanotechnology Laboratory

or [MEEG 4323M](#)

Honors Nanotechnology Laboratory

<u>PHYS 4793L</u>	Nanotechnology Laboratory	
or <u>PHYS 4793M</u>	Honors Nanotechnology Laboratory	
Nanotechnology Research (Independent Study or Honors Thesis in nanotechnology)		3

Students can choose from the following courses:

<u>BENG 450V</u>	Special Problems
<u>BENG 451VH</u>	Honors Thesis
<u>BMEG 450VH</u>	Honors Thesis
<u>BMEG 460VH</u>	Honors Individual Study
<u>CHEG 488V</u>	Special Problems
<u>CHEM 400V</u>	Chemistry Research
<u>ELEG 488V</u>	Special Problems
<u>ELEG 488VH</u>	Honors Special Problems
<u>MEEG 492V</u>	Individual Study in Mechanical Engineering
<u>MEEG 4903H</u>	Honors Mechanical Engineering Research
<u>PHYS 498V</u>	Senior Thesis
<u>PHYS 306V</u>	Projects
<u>PHYS 399VH</u>	Honors

Elective Courses

A minimum of 9 hours of elective courses selected from the following: 9

<u>BENG 3113</u>	Measurement and Control for Biological Systems
or <u>BENG 3113H</u>	Honors Measurement and Control for Biological Systems
<u>BENG 3733</u>	Transport Phenomena in Biological Systems
<u>BENG 4743</u>	Food and Bio-Product Systems Engineering
<u>BENG 4123</u>	Biosensors & Bioinstrumentation
<u>BENG 4743</u>	Food and Bio-Product Systems Engineering
<u>BMEG 3634</u>	Biomaterials
<u>BMEG 3824</u>	Biomolecular Engineering
<u>BMEG 4243</u>	Advanced Biomaterials and Biocompatibility
<u>CHEG 3713</u>	Chemical Engineering Materials Technology
<u>CHEM 4123</u>	Advanced Inorganic Chemistry I
<u>CHEM 4213</u>	Instrumental Analysis
<u>CHEM 4283</u>	Energy Conversion and Storage
<u>ELEG 4253</u>	Nanotechnology in Engineering & Medicine
<u>ELEG 4203</u>	Semiconductor Devices
<u>ELEG 4303</u>	Introduction to Nanomaterials and Devices
<u>ELEG 4213</u>	MEMS and Microsensors
<u>MEEG 491V</u>	Special Topics in Mechanical Engineering
<u>MEEG 4313</u>	Introduction to Tribology
<u>MEEG 4303</u>	Materials Laboratory
<u>PHYS 3213</u>	Electronics in Experimental Physics

PHYS 4073	Introduction to Quantum Mechanics
PHYS 4213	Physics of Devices
PHYS 4713	Solid State Physics
PHYS 4773	Introduction to Optical Properties of Materials

or from other appropriate courses not on this list if approved first by the Nanotechnology Minor Curriculum Committee and by the course instructor.

Below are model programs for students from different participating departments. Students also have the flexibility to design their own programs according to the stated requirements above.

Model program for a student majoring in Biological Engineering

Required Courses (6 hours) 6

BENG 4753L	Nanotechnology Laboratory
or BENG 4753M	Honors Nanotechnology Laboratory
BENG 450V	Special Problems
or BENG 451VH	Honors Thesis

Elective Courses (9 hours) 9

BENG 3113	Measurement and Control for Biological Systems
or BENG 3113H	Honors Measurement and Control for Biological Systems
BENG 4743	Food and Bio-Product Systems Engineering
BENG 4123	Biosensors & Bioinstrumentation

Model program for a student majoring in Biomedical Engineering

Required Courses (6 hours) 6

BMEG 4103L	Nanotechnology Laboratory
or BMEG 4103M	Honors Nanotechnology Laboratory
BMEG 450VH	Honors Thesis
or BMEG 460VH	Honors Individual Study

Elective Courses (9 hours) 9

BMEG 3634	Biomaterials
BMEG 3824	Biomolecular Engineering
BMEG 4243	Advanced Biomaterials and Biocompatibility

Model program for a student majoring in Chemical Engineering

Required Courses (6 hours) 6

PHYS 4793L	Nanotechnology Laboratory
or PHYS 4793M	Honors Nanotechnology Laboratory
CHEG 488V	Special Problems

Elective Courses (9 hours) 9

CHEG 3713	Chemical Engineering Materials Technology
CHEG 5023	Nano Bio Photonics (will be co-listed 4000-level course in the future)
CHEG 4043	Colloids and Surfaces

Model program for a student majoring in Chemistry

Required Courses (6 hours) 6

<u>CHEM 4153L</u>	Nanotechnology Laboratory	
or <u>CHEM 4153M</u>	Honors Nanotechnology Laboratory	
<u>CHEM 400V</u>	Chemistry Research	
Elective Courses (9 hours)		9
<u>CHEM 4123</u>	Advanced Inorganic Chemistry I	
<u>CHEM 4213</u>	Instrumental Analysis	
<u>CHEM 4283</u>	Energy Conversion and Storage	
Model program for a student majoring in Electrical Engineering		
Required Courses (6 hours)		6
<u>PHYS 4793L</u>	Nanotechnology Laboratory	
<u>ELEG 488V</u>	Special Problems	
or <u>ELEG 488VH</u>	Honors Special Problems	
Elective Courses (9 hours)		9
<u>ELEG 4253</u>	Nanotechnology in Engineering & Medicine	
<u>ELEG 4203</u>	Semiconductor Devices	
<u>ELEG 4303</u>	Introduction to Nanomaterials and Devices	
Model program for a student majoring in Mechanical Engineering		
Required Courses		6
<u>MEEG 4323L</u>	Nanotechnology Laboratory	
or <u>MEEG 4323M</u>	Honors Nanotechnology Laboratory	
<u>MEEG 492V</u>	Individual Study in Mechanical Engineering	
or <u>MEEG 4903H</u>	Honors Mechanical Engineering Research	
Elective Courses		9
<u>MEEG 491V</u>	Special Topics in Mechanical Engineering	
<u>MEEG 4313</u>	Introduction to Tribology	
Model program for a student majoring in Physics		
Required Courses (6 hours)		6
<u>PHYS 4793L</u>	Nanotechnology Laboratory	
or <u>PHYS 4793M</u>	Honors Nanotechnology Laboratory	
<u>PHYS 498V</u>	Senior Thesis	
or <u>PHYS 399VH</u>	Honors	
Elective Courses (9 hours)		9
<u>PHYS 4073</u>	Introduction to Quantum Mechanics	
<u>PHYS 4713</u>	Solid State Physics	
<u>PHYS 4773</u>	Introduction to Optical Properties of Materials	

8-Semester Plan

Are Similar Programs available in the area?

No

Estimated Student Demand for Program NA
 Scheduled Program Review Date NA

Program Goals and Objectives

Program Goals and Objectives
NA

Learning Outcomes

Learning Outcomes
NA

Description and justification of the request

Description of specific change	Justification for this change
Deleting the program.	One of the required courses for the Minor, Nanotechnology Laboratory, is expensive to offer and can only accommodate a limited class size. There is not enough interest from the University to continue to support the course.

Upload attachments

Reviewer Comments

Alice Griffin (agriffin) (11/30/18 10:04 am): Reviewers, please note that ADHE no longer requires notification regarding changes to Minor programs. As such, I advised the program to select a minor change for the reason for the modification in order for the approval workflow to remain on campus. Additionally, there is no need for the college to attach an LON in order to request the deletion for the NANO-M program.

Lisa Kulczak (lkulcza) (11/30/18 10:57 am): Switched reason to reflect deletion of the minor; workflow remains on-campus only and no LON needed now (see Alice's earlier comment).