New Program Proposal

Date Submitted: 04/15/24 12:03 pm

Viewing: MATEMS-QMAD : Materials Engineering: 2-Dimensional Quantum Materials and Devices Concentration

Last edit: 11/14/24 8:00 pm

Changes proposed by: mleftwi

Submitter:	User ID:	mleftwi@uark.edu	Phone: 575-2875
Program Status	Active		
Academic Level	Graduate		
Type of proposal	Concentration		
Select a reason for this new program	Adding New Concentration		
Effective Catalog Year	Fall 2025		
College/School Code	Graduate School and International Education (GRAD)		
Department Code	Materials Science and Engineering (MSEN)		
Program Code	MATEMS-QMAD		
Degree	Master of Science in Materials Engineering		
CIP Code			

In Workflow

1. **GRAD Dean Initial**
2. **GRAD Dean Initial**
3. **Director of Curriculum Review and Program Assessment**
4. **Registrar Initial**
5. **Institutional Research**
6. **MSEN Chair**
7. **GRAD Dean**
8. **Global Campus**
9. **Provost Review**
10. **Graduate Council**
11. **Faculty Senate**
12. Provost Final
13. Provost's Office--Documentation sent to System Office
14. Higher Learning Commission
15. Board of Trustees
16. ADHE Final
17. Provost's Office--Notification of Approval
18. Registrar Final
19. Catalog Editor Final

Approval Path

1. 06/27/24 9:27 am Ed Bengtson (egbengts): Approved for GRAD Dean Initial
2. 06/27/24 9:33 am Ed Bengtson

(egbengts): Approved for GRAD Dean Initial
3. 10/29/24 4:20 pm Lisa Kulczak (lkulcza): Approved for Director of Curriculum Review and Program Assessment
4. 10/30/24 2:13 pm Gina Daugherty (gdaugher): Approved for Registrar Initial
5. 10/31/24 11:36 am Doug Miles (dmiles): Approved for Institutional Research
6. 10/31/24 12:33 pm Ed Bengtson (egbengts): Approved for MSEN Chair
7. 10/31/24 12:33 pm Ed Bengtson (egbengts): Approved for GRAD Dean
8. 10/31/24 12:34 pm Suzanne Kenner (skenner): Approved for Global Campus
9. 10/31/24 3:16 pm Jim Gigantino (jgiganti): Approved for Provost Review
10. 11/23/24 7:06 am Ed Bengtson (egbengts):

Approved for Graduate Council

14.1801 - Materials Engineering.

Program Title

Materials Engineering: 2-Dimensional Quantum Materials and Devices Concentration

Program Delivery Method

On Campus

Is this program interdisciplinary between two or more colleges or schools?

Yes

College(s)/School(s)

College/School Name
Fulbright College of Arts and Sciences (ARSC)
College of Engineering (ENGR)

Do the proposed changes impact any specific course(s) from another college or school?

No

What are the total hours needed to complete the program?

33

Program Requirements and Description

Requirements

Concentration in 2-Dimensional Quantum Materials and Devices

Choose 9 hours from the following:

MSEN 5880V	Special Problems in Materials Science and Engineering (Functional Materials Laboratory)
or PHYS 5880V	Selected Topics in Physics
MSEN 5880V	Special Problems in Materials Science and Engineering (Functional Materials: From Synthesis to Properties) required for NSF NRT trainees
or PHYS 5880V	Selected Topics in Physics
ELEG 5870V	Special Topics in Electrical Engineering (Materials & Mechanisms for Quantum Computing) required for NSF NRT trainees

or MSEN 5870V	Special Topics in Materials Science and Engineering
MSEN 5880V	Special Problems in Materials Science and Engineering (Electrodynamics of Quantum Devices) required for NSF NRT trainees
or PHYS 5880V	Selected Topics in Physics
CSCE 50703	Data Mining
PHYS 54203	Quantum Mechanics II
CSCE 50603	Machine Learning

Program Costs

NA

Library Resources

NA

Instructional Facilities

NA

Faculty Resources

NA

List Existing Certificate or Degree Programs that Support the Proposed Program

Program(s)
MATEMS - Materials Engineering, Master of Science in Materials Engineering

Are Similar Programs available in the area?

No

Estimated Student Demand for Program: 15

Scheduled Program Review Date: 2027-2028

Program Goals and Objectives

Program Goals and Objectives
1. Provide students with interdisciplinary education and training in materials science and engineering to meet the needs of emerging technology industries. 2. Place students in interdisciplinary groups performing rigorous and challenging research to prepare them for

Program Goals and Objectives
careers in industrial research teams, national labs, and academic positions. 3. Prepare students to be effective in technology management and entrepreneurship.

Learning Outcomes

Learning Outcomes
1. Conduct independent investigations in an interdisciplinary environment, expanding the breadth and depth of state-of-the-art knowledge in the field of materials, materials processing, and devices enabled by advances in materials. 2. Master knowledge, practices, and skills from traditional graduate level programs in Physics, Chemistry, Electrical Engineering, Chemical Engineering, Mechanical Engineering, Biological Engineering, and Biomedical Engineering, regardless of prior traditional educational background. 3. Communicate effectively deep level knowledge of their work to persons well-versed in their field, detailed technical concepts to persons with strong technical backgrounds outside of their field, and general concepts and applications to the general public. 4. Work efficiently in interdisciplinary team environments, fully supporting team goals through active membership or through team leadership as appropriate. 5. Implement intellectual property management and research commercialization processes, encouraging migration of ideas from formulation to societal benefit during their professional careers. 6. Execute duties found in entry-level professional positions with the operational skills equivalent to at least one year’s experience in that position.

Description and Justification for this request

Description of request	Justification for request
We are adding a new concentration area to the MATE-MS degree. This is the 2D-QMaD (QMAD) concentration area noted in the "requirements" above.	This is a new concentration area being added as a result of our recent NSF-NRT award and additional programmatic requirements to add the new 2D-QMaD (QMAD) concentration area.

Upload attachments

Letter_of_Notification MATEMS-QMAD.pdf

MATEMS-QMAD - New Concentration - Ltr of Notification_Rev_BOT.pdf

Reviewer Comments

Lisa Kulczak (lkulcza) (08/27/24 4:35 pm): Adjusted CIP code to match that of the parent degree; concentrations cannot carry separate CIP codes. Updated program title and program code to reflect established naming conventions for the existing degree and concentrations, updated next scheduled program review date. Due to changes made by ADHE, new concentrations will now need off-campus approval and a Letter of Notification. Have contacted the program about supplying the necessary form.

Lisa Kulczak (lkulcza) (08/27/24 4:58 pm): ATTENTION REGISTRAR: This proposal will need off-campus approval; please adjust the workflow accordingly.

Lisa Kulczak (lkulcza) (10/29/24 3:50 pm): Uploading the LON received from the program today.

Lisa Kulczak (lkulcza) (10/29/24 4:09 pm): Uploaded revised LON with dates inserted.

Lisa Kulczak (lkulcza) (10/29/24 5:04 pm): ATTENTION REGISTRAR: Also please remove Undergraduate Council from the workflow.

Gina Daugherty (gdaugher) (10/30/24 2:13 pm): Updated workflow to include off campus approval steps and removed Undergraduate Council from workflow.

Key: 998