New Program Proposal

Date Submitted: 10/23/19 12:27 pm

Viewing: OPANMS : Operations Analytics, Master of Science

Last edit: 11/08/19 11:17 am

Changes proposed by: rossetti

Submitter:	User ID:	rossetti	Phone: 575-6756
Program Status	Active		
Academic Level	Graduate		
Type of proposal	Major/Field of Study		
Select a reason for this new program	Adding New Degree--(LOI 1, Proposal-1)		

Are you adding a concentration?

No

Are you adding or modifying a track?

No

Are you adding or modifying a focused study?

No

Effective Catalog Year	Fall 2020

College/School Code

College of Engineering (ENGR)

Department Code

Department of Industrial Engineering (INEG)

Program Code	OPANMS
Degree	Master of Science
CIP Code	

In Workflow

1. ENGR Dean Initial
2. GRAD Dean Initial
3. Provost Initial
4. Director of Program Assessment and Review
5. Registrar Initial
6. Institutional Research
7. INEG Chair
8. ENGR Curriculum Committee
9. ENGR Faculty
10. ENGR Dean
11. Global Campus
12. Dean of University Libraries
13. Provost Review
14. University Course and Program Committee
15. Graduate Committee
16. Faculty Senate
17. Provost Final
18. Provost's Office--Documentation sent to System Office
19. Higher Learning Commission
20. Board of Trustees
21. ADHE Initial
22. ADHE Final
23. Provost's Office--Notification of Approval

24. Registrar Final
25. Catalog Editor Final

Approval Path

1. 10/31/19 3:01 pm Norman Dennis (ndennis): Approved for ENGR Dean Initial
2. 10/31/19 3:40 pm Pat Koski (pkoski): Approved for GRAD Dean Initial
3. 11/05/19 1:44 pm Terry Martin (tmartin): Approved for Provost Initial
4. 11/06/19 2:24 pm Alice Griffin (agriffin): Approved for Director of Program Assessment and Review
5. 11/07/19 6:50 pm Lisa Kulczak (lkulcza): Approved for Registrar Initial
6. 11/08/19 7:54 am Gary Gunderman (ggunderm): Approved for Institutional Research
7. 11/08/19 9:08 am Ed Pohl (epohl): Approved for INEG Chair
8. 11/08/19 9:47 am Manuel Rossetti

(rossetti): Approved for ENGR Curriculum Committee
9. 11/08/19 10:48 am Norman Dennis (ndennis): Approved for ENGR Faculty
10. 11/08/19 10:48 am Norman Dennis (ndennis): Approved for ENGR Dean
11. 11/08/19 11:17 am Suzanne Kenner (skenner): Approved for Global Campus
12. 11/08/19 11:17 am Dennis Clark (dennisc): Approved for Dean of University Libraries
13. 11/12/19 2:32 pm Terry Martin (tmartin): Approved for Provost Review

14.3701 - Operations Research.

Program Title

Operations Analytics, Master of Science

Program Delivery Method

On Campus

Online/Web-based

Is this program interdisciplinary?

No

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

No

What are the total hours needed to complete the program?	30

On-line/Web-based Information

Reason for offering Web-based Program

To reach working professionals who need the flexibility that on-line delivery permits.

Maximum Class Size for Web-based Courses	20

Course delivery mode

Method(s)
Blended Delivery Methods

Describe Blended Delivery Methods

Online and course project based methods

Class interaction mode

Method(s):
Other

Specify Other Interaction Methods

Blackboard

Percent Online

100% with No Required Campus Component

50-99%

Provide a List of Services Supplied by Consortia Partners or Outsourced Organization

The only service outsourced is online proctoring service. The University of Arkansas partners with ProctorU for online test proctoring services for some online exams.

Estimate Costs of the Program over the First 3 Years	refer to the required proposal document attached
List Courses Taught by Adjunct Faculty	
Upload Memorandum of Understanding Forms (if required)	

Program Requirements and Description

Requirements

Master of Science in Operations Analytics (M.S.O.A) (OPANMS)

The Department of Industrial Engineering offers a graduate program leading to the Master of Science in Operations Analytics (M.S.O.A.) for engineering, science, and other non-engineering graduates. The Master of Science in Operations Analytics is an intensive program that will guide students through the theory and practice of the quantitative modeling of enterprise operations via descriptive, predictive, and prescriptive analytics. Students will develop knowledge of the principles and practices of analytics modeling methods, such as optimization, statistical modeling, machine learning, simulation, and computing methods, as they apply to the strategic, operational, and tactical control of operations.

Prerequisites to the M.S.O.A. Degree Program:

There are no prerequisites for students with an undergraduate degree from an ABET-accredited industrial engineering program.

For students with a degree other than an ABET-accredited industrial engineering degree, a number of prerequisite courses may be required. Students are expected to have completed mathematics courses through differential and integral calculus of several variables and vector calculus and linear algebra. Students are expected to have completed a calculus-based probability and statistics course. In addition, students are expected to have completed a computer programming course. Specific University of Arkansas courses that meet these prerequisites are available on-line through the INEG departmental web-pages.

Requirements for the Master of Science in Operations Analytics

In addition to the requirements of the Graduate School and the College of Engineering, the following program requirements must be satisfied by candidates for the M.S.O.A. degree.

Candidates for the degree are required to complete 30 semester hours of course work.

All candidates must successfully complete a master’s oral examination that is conducted by the candidate’s faculty committee.

Accelerated Master of Science in Operations Analytics

High-achieving current undergraduate students seeking a BS degree at the University of Arkansas who choose to pursue graduate studies in Operations Analytics may participate in the accelerated M.S.O.A. program. Provided that 6 credit hours of 5000 OPAN course work can be taken as electives in the student's current undergraduate program, students may also count those 6 hours towards their M.S.O.A. degree. In addition, students may take another 6 credit hours of graduate degree credit as undergraduate students in order to apply them to their M.S.O.A. degree. These additional 6 hours of courses may not have been used towards the BS undergraduate degree and must meet M.S.O.A. degree requirements. The total of 12 credit hours of graduate courses taken as an undergraduate student must be taken during the final 12 month period of their undergraduate degree. Once fully admitted to the M.S.O.A. program, students request that up to twelve hours of 5000 level or above courses taken in the final 12 month period of their undergraduate degree count toward their graduate degree, if these courses were taken on the University of Arkansas, Fayetteville campus. Students then take an additional 18 credit hours of approved OPAN graduate level courses in order to meet the M.S.O.A. degree requirements. Undergraduate students interested in the accelerated M.S.O.A. degree should apply to the program prior to starting the 2nd to last semester of their undergraduate program. To be eligible students must have a 3.5 cumulative GPA or higher and submit the normal application materials required by the graduate school for the M.S.O.A. degree program. For students eligible for the accelerated M.S.O.A. program that have a cumulative GPA of 3.5 or higher, the submission of GRE scores is waived.

Required Courses:

OPAN 5003 Introduction to Operations Analytics

OPAN 5013 Applied Predictive Analytics

OPAN 5023 Applied Prescriptive Analytics

OPAN 5903 Operations Analytics Capstone

OR

OPAN 5913 Operations Analytics Industrial Practicum

Electives (18 hours total)

Students must select course electives from both of the following course topic areas for a total of 18 credit hours.

Operations Analytics (choose 4 or 5 courses)

INEG 5313 Engineering Applications of Probability Theory (3 s.h.)

INEG 5323 Engineering Applications of Stochastic Processes (3 s.h.)

INEG 5683 Nonlinear Programming (3 s.h.)

INEG 5693 Heuristic Optimization (3 s.h.)

INEG 5443 Decision Models (3 s.h.)

INEG 5833 Introduction to Database Concepts for Industrial Engineers (3 s.h.)

INEG 5163 Introduction to Modern Statistical Techniques for Industrial Applications (3 s.h.)

OPAN 5713 Simulation Analytics

Engineering and Operations Management (choose 1 or 2 courses)

EMGT 5033 Introduction to Engineering Management (3 s.h.)

EMGT 5053 Tradeoff Analytics for Engineering Management (3 s.h.)
EMGT 5603 Systems Thinking and Systems Engineering
OMGT 5373 Quality Management (3 s.h.)
OMGT 5013 Supply Chain Management for Operations Managers (3 s.h.)
OMGT 5783 Project Management for Operations Managers (3 s.h.)
OMGT 5983 Advanced Project Management (3 s.h.)
INEG 5423 Advanced Engineering Economy (3 s.h.)
INEG 5623 Analysis of Inventory Systems (3 s.h.)
INEG 5333 Design of Industrial Experiments (3 s.h.)
INEG 5263 Engineering Statistics (3 s.h.)
INEG 5803 Simulation (3 s.h.)

Program Costs

No additional costs are anticipated.

Library Resources

Existing library resources will be used

Instructional
Facilities

Existing instructional facilities will be used.

Faculty Resources

Adjunct faculty with a PhD in Industrial Engineering, Operations Research, Analytics, or related fields will be used. Current INEG faculty interested in teaching in the program will be used.

List Existing Certificate or Degree Programs
that Support the Proposed Program

Program(s)
INEGMS - Industrial Engineering, Master of Science in Industrial Engineering
EMGTMS - Engineering Management, Master of Science in Engineering Management
OPMGMS - Operations Management, Master of Science in Operations Management

Are Similar Programs available in the area?

No

Estimated Student Demand for Program 15-30 per year

Scheduled Program Review Date 2028-2029

Program Goals and Objectives

Program Goals and Objectives
Successfully applying core operations analytics quantitative modeling skills to the management, control, and improvement of enterprise or public sector organizations.
Demonstrating professional and intellectual growth as managers and leaders in operations analytics and their organizations.
Pursuing life-long learning and continued professional development; and undertaking leadership roles in their profession, in their communities, and in the global society.

Learning Outcomes

Learning Outcomes
An ability to use information systems, statistics, and computing principles and apply state-of-the-art technologies for data representation, data retrieval, data manipulation, computational analytics, data analysis, visualization as they apply analytics within enterprise operations.
An ability to develop descriptive, predictive, and prescriptive mathematical and statistical models and to apply those models through computational methods to problems of controlling and improving enterprise operations.
An ability to use foundational knowledge and apply critical thinking skills to problem identification, problem solving, and decision making, within the context of controlling and improving enterprise operations.
An ability to adapt analytics concepts to interpret and communicate findings and implications to senior decision makers.

Description and Justification for this request

Description of request	Justification for request

Description of request	Justification for request
Create new MS degree program in Operations Analytics	Three occupational groups were reviewed that align to proposed online Master's in Operations Analytics, including: o General & Operations Managers o Operations Research Analysts o Management Analysts All three occupation groups represented positive job growth at the national, regional (border state), and state level – with Operations & Research Analysts representing +18% job growth across these three levels. The proposed degree program will meet this demand for operations analytics professionals.

Upload attachments

OPANMS - New Degree - Ltr of Intent.docx

OPANMS - New Degree - Supporting Documentation.pdf

OPANMS - New Degree - Proposal.docx

Reviewer Comments

Norman Dennis (ndennis) (10/31/19 3:01 pm): Added revised Proposal and LOI. Included Faculty CVs and Workforce Analysis

Alice Griffin (agriffin) (11/06/19 12:22 pm): Hyper-linked all courses to demonstrate their pending approval status.

Alice Griffin (agriffin) (11/06/19 12:54 pm): Revised program title field to match naming convention established by the university.

Alice Griffin (agriffin) (11/06/19 1:12 pm): Minor edits to proposal document for formatting. Merged supporting documents into one PDF. Renamed all documentation to match BOT naming convention.

Alice Griffin (agriffin) (11/06/19 2:19 pm): Removed course descriptions from required course list in consultation with submitter. Also removed cross-listed OPAN courses in electives as directed from submitter.

Alice Griffin (agriffin) (11/06/19 2:23 pm): Made similar edits to curriculum in the proposal document. Uploaded revised copy.

Alice Griffin (agriffin) (11/06/19 2:24 pm): All pending courses are currently in the approval process.

Key: 723