FAU

FLORIDA ATLANTIC UNIVERSITY

NEW/CHANGE PROGRAM REQUEST
Graduate Programs

Department Electrical Engineering and Computer Science (EECS)

College Engineering and Computer Science

UGPC Approval _____
UFS Approval _____
Banner _____
Catalog _____

Program Name		Effective Date (TERM & YEAR)
Professional Master of Science with Major in Artificial Intelligence	☐ New Program* ✔ Change Program*	Fall 2022

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

EECS department is proposing a self-supporting version of its existing program, the Professional Master of Science with Major in Artificial Intelligence. This program is designed specifically for working professionals and will allow them to pursue a master's degree while continuing their professional career. The admission requirements and the curriculum specifications are detailed in the attached document.

*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	Consult and list departments that may be affected by the change(s) and attach documentation
Hanqi Zhuang / zhuang@fau.edu / 561-297-3413	

Approved by		Date
Department Chair	_____	9/22/2021
College Curriculum Chair	_____	09/22/2021
College Dean	McArdle	9/25/2021
UGPC Chair	Christopher Beetle	Oct 22, 2021
UGC Chair	Paul Peluso	Oct 22, 2021
Graduate College Dean	Robert W. Stackman	Oct 22, 2021
UFS President	_____	_____
Provost	_____	_____

Email this form and attachments to UGPC@fau.edu 10 days before the UGPC meeting.

Professional Master of Science with Major in Artificial Intelligence

The M.S. in Artificial Intelligence Professional Program is designed specifically for working professionals. Professionals will be able to advance their careers with an accelerated graduate program and obtain an advanced degree while continuing to work in their professional careers. The course offering format includes evenings, weekends and online material using Canvas. This degree requires 30 graduate credits. The duration of each course is four weeks or one of the FAU semester/mini-mester course duration. Students will be able to complete the program in one year. Only the non-thesis option is available.

Admission Requirements

To qualify for unconditional or full acceptance into the M.S. in Artificial Intelligence Professional Program, applicants are required to meet all the admission requirements for the M.S. with major in Artificial Intelligence program.

Conditional admission may be available under extraordinary circumstances for applicants who show high promise to successfully complete the program and who have received a bachelor's degree from a regionally accredited institution, but who fall short of the GPA and/or the GRE requirement. In these cases, the admissions committee for the Professional M.S. in Artificial Intelligence will review the application carefully and consider all aspects including, but not limited to, grade trends, mature work experience, work accomplishment and promotion, type and rigor of undergraduate and master's degree programs, references and letters of recommendation.

Degree Requirements

Degree requirements are the same as specified for the non-thesis option for the M.S. degree in Artificial Intelligence.

Program Fees

The M.S. in Artificial Intelligence Professional Program is a full-service, all-inclusive program. The fees cover all program costs including tuition, course materials and graduation activities.

Application Process and More Information

To apply or receive more information about this program, visit the Electrical Engineering and Computer Science website or call 561-297-3855.

FLORIDA ATLANTIC UNIVERSITY

Proposal for For-Credit Self-Supporting Program

This form must be completed and submitted to Continuing Education/Office of the Provost. New degrees, or an existing degree with a different curriculum tied to Self-Supporting delivery, must be approved through the normal faculty governance process.

College or Academic Unit: College of Engineering and Computer Science (COECS)

Department/School of Academic Unit: Department of Electrical Engineering and Computer Science (EECS)

Name of Degree: Master of Science with Major in Artificial Intelligence

Specialized track (if applicable): Professional

CIP Code: 11.0102

Proposed Implementation Date: Fall 2022

1. Describe the operation and delivery format of the program. Include information of the uniqueness of the program, the target audience, and enrollment projections. Please provide information on data for enrollment projection.

The Department of Electrical Engineering and Computer Science (EECS) in the College of Engineering and Computer Science (COECS) at FAU is proposing a Professional Master of Science in Artificial Intelligence (MSAI).

The course offering format includes evenings, weekends, and online material. The Professional MSAI has 30 credits, and the curriculum structure is similar to the existing MSAI degree. Each course duration is 4 weeks. The expected completion time is 1 year. Students will participate in the program in cohort. Students will start the program at the beginning of Fall/Spring/ Summer semesters, or at the beginning of an 8-week mini-mester during the Fall/Spring semesters.

The targeted audience includes, but is not limited to, working professionals in South Florida. They will be able to advance their career with an accelerated graduate program and obtain an advanced degree while continuing their professional career. This 1-year program should enroll approximately 10 students the first year with an ongoing enrollment of 30 students in year five and thereafter.

Enrollment Projections for the professional MSAI:

Year	Head Count	Credit Hours	FTE*
2022	10	300	9.375
2023	15	450	14.0625
2024	20	600	18.75
2025	25	750	23.4375
2026	30	900	28.125

Term Full-Time Equivalent enrollment (FTE) is based on FAU definition, which divides credit hours by 32: https://www.fau.edu/iea/pdf/sasva/Data_Dictionary_10-29-2019.pdf

2. State the tuition for the program and explain the process used to determine the proposed self-supporting tuition rate. Include information on similar programs being offered elsewhere and their self-supporting tuition rates. Attach market analysis for proposed program, include assessment of need and projected workforce demand.

The tuition for the proposed Professional MSAI is the same for in-state and out-of-state students. This cost is based on competitive offerings across peer institutions and current SUS and FAU policies. The proposed cost per credit hour is $800; thus students will complete 30 credit hours for a total tuition of $24,000.

Current tuition for comparable online Master of Science programs include:

University	Program	Tuition
Florida International University	MS, Computer Engineering (30 credits)	$25,000
University of Central Florida	MS, Healthcare Systems Eng (30 credits)	$37,174
University of Florida	MS, Electrical & Computer Eng (30 credits)	$15,030 - $21,750
Nova Southeastern University	MS, Computer Science (30 credits)	$24,600
Florida Atlantic University	MS, Computer Science (30 credits)	$24,000

3. Provide a listing of the curriculum for the present E&G program and the curriculum for the proposed self-supporting program. Is the curriculum for both programs the same?

The curriculum is the same as the E&G Curriculum and consist of 30 credits. This program contains only the non-thesis option. Students will take 10 courses from which 3 are core courses and 7 are elective courses. At least one-half of the credits must be at the 6000 level or above.

Core Courses (9 credits)	
Computational Foundations of Artificial Intelligence	CAP 5625
Artificial Intelligence	CAP 6635

Data Mining and Machine Learning	CAP 6673

Electives (21 credits). Select seven courses from the table below.

Computer Vision	
Foundations of Vision	CAP 6411
Computer Vision	CAP 6415
Machine Learning for Computer Vision	CAP 6618
Visual Information Retrieval	COP 6728
Data Analytics and Algorithms	
Introduction to Data Science	CAP 5768
Social Networks and Big Data Analytics	CAP 6315
Data Mining for Bioinformatics	CAP 6546
Big Data Analytics and Hadoop	CAP 6780
Computer Performance Modeling	CEN 6405
Analysis of Algorithms	COT 6405
Knowledge Management and Reasoning	
Natural Language Processing	CAP 6640
Information Retrieval	CAP 6776
Web Mining	CAP 6777
Semantic Web Programming	COP 5859
Machine Learning	
Introduction to Neural Networks	CAP 5615
Evolutionary Computing	CAP 6512

Sparse Learning	CAP 6617
Deep Learning	CAP 6619
Reinforcement Learning	CAP 6629
Advanced Data Mining and Machine Learning	CAP 6778
Applications	
Artificial Intelligence in Medicine and Healthcare	CAP 6683
Computational Advertising and Real-Time Data Analytics	CAP 6807
Robotic Applications	EEL 5661
Additional Elective Allowance *Students may substitute three elective courses with any relevant graduate courses with prior approval from the advisor.*	

4. Discuss the impact of the program on existing FAU programs.

    a. **Explain how the unit will ensure that sufficient courses, paid through auxiliary funds are available to meet student demand and facilitate completion of each program submitted for consideration.**
    Some of the courses from the professional MSAI are already offered in FAU's approved self-supporting programs in the College of Engineering and Computer Science. These programs are managed in a cohort format, which will ensure that a sufficient number of courses are prescheduled and available to meet student demand and facilitate completion of students enrolling in the professional MSAI.

    b. **Will any similar E&G courses be eliminated or scaled back if this program is implemented.**
    The current MSAI will not be eliminated or scaled back. The program offerings will run side-by-side.

5. Will this program increase the state's fiscal liability or obligation? Will the self-supporting program cohort supplant or diminishing productivity of an existing E&G funded degree program in the same discipline?
This self-supporting program will not increase the state's fiscal liability or obligation. The Self-

supporting program track cohort should not supplant or diminish the productivity an existing E&G funded degree program in the same discipline.

6. How will offering the proposed Self-Supporting program aligns with the mission of FAU (Race to Excellence 2015-2025). Outline how this program assists the University in achieving its performance metrics. Include information on assessment of need and projected workforce demand.

The Professional MSAI program aligns well with the Mission Statement of Florida Atlantic University as "a multi-campus public research university that pursues excellence in its missions of research, scholarship, creative activity, teaching, and active engagement with its communities" as we pursue excellence in teaching and engagement with the technology community.

The proposed program is aligned with the strategic plan of the University to grow research activities and education in engineering, artificial intelligence and data analytics. The Professional MSAI contributes to the strategic goal of enriching the educational experience by strengthening and expanding graduate programs at FAU, as well as meeting professional and workforce needs. The program will be directly contributing to the increase of the number of MS degrees awarded in areas of strategic emphasis (STEM).

Workforce Demand:

The demand for university graduates level skills in artificial intelligence is strong. Over the past years, there has been dramatic progress in the rise of artificial intelligence (AI) and its use in the development of systems that can reason and respond to increasingly complex situations. AI is everywhere and the changes enabled by this technology have just begun. AI is transforming every segment of American industry. It is making agriculture more precise and efficient, revealing new medical technologies and bringing the prospect of autonomous transportation and advanced manufacturing closer to reality. The professional MSAI is designed to allow working professionals in the region to further their education and pursue the MSAI degree while working. We expect the certificate to be popular among our corporate educational partner JM Family Enterprises and other companies in south Florida such as Magic Leap, Modernizing Medicine, Stryker, and FPL.

7. Identify any prerequisites or restrictions for acceptance into this program.

At a minimum, applicants are expected to meet the following requirements.

1. Have obtained a bachelor's degree from an accredited institution. They are expected to have taken a statistics course and Calculus I or Methods or Calculus. In addition, students are expected to be proficient in programming and knowledgeable in data structures and algorithm analysis.

2. At least a 3.0 (of a 4.0 maximum) GPA in the last 60 credits attempted prior to graduation.
3. GRE scores. The GRE requirement is waived for any student who has a baccalaureate degree from FAU's EECS department with a GPA of at least 3.25 (out of a possible 4.0) in the last 60 credits attempted prior to graduation.
4. International students from non-English-speaking countries must be proficient in written and spoken English as evidenced by a score of at least 500 (paper-based test) or 213 (computer-based test) or 79 (Internet-based test) on the Test of English as a Foreign Language (TOEFL) or a score of at least 6.0 on the International English Language Testing System (IELTS).

8. How will the unit monitor the quality and success of the self-supporting program? Provide specific metrics, evaluation methods, and frequency of evaluation.
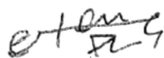
- Number of students enrolled: The number of students enrolled in each semester will vary. Students can start the program at the beginning of Fall/Spring/ Summer semesters, or at the beginning of an 8-week mini-mester during the Fall/Spring semesters. Enrollment is a function of market demand and economic conditions, as well as a prospective student's self-assessment of their time and availability to commit to a program.

- Number of students graduating: The program structure reinforces timely graduation rates. The number of students for each program during each calendar year will be evaluated.

- Student satisfaction: A satisfaction score will be reported for each course. The score will measure a composite of items including program content, pedagogical effectiveness of the professor, and administrative services provided to the student.

_____   9/21/2021_____
Department Chair/School Director   Date

_____   9/22/2021_____
College Curriculum Committee   Date

M. Cardei
Digitally signed by Mihaela Cardei
DN: cn=Mihaela Cardei, o=Florida Atlantic University, ou, email=mcardei@fau.edu, c=US
Date: 2021.09.22 11:58:53 -04'00'

9/22/2021

Dean College of Engineering and
Computer Science

Date

Julie G. Botti

9/30/2021

Executive Director COCE

Date

Russell P.

10/4/21

Senior Associate Provost

Date

University Curriculum Committee

Date

University Faculty Senate

Date

Chief Financial Officer

Date

Provost or Designee

Date

College of Engineering and Computer Science - Professional MS in Artificial Intelligence

Year 1		10 Students
Total Course Revenues ($800 per credit for 30 credits per student)	$	240,000
Total Revenue and Local Fees[1]	$	(20,433)
COECS Course Revenues	**$**	**219,567**
Total Direct Expenses[2]	$	(119,250)
Total Indirect Expenses[3]	$	(60,200)
Total Auxiliary Overhead Fee and Provost Fee from Program[4]	$	(25,464)
Program Result - Year 1	**$**	**14,653**

Year 2		15 Students
Total Course Revenues ($800 per credit for 30 credits per student)	$	360,000
Total Revenue and Local Fees[1]	$	(30,650)
COECS Course Revenues	**$**	**329,351**
Total Direct Expenses[2]	$	(130,500)
Total Indirect Expenses[3]	$	(60,200)
Total Auxiliary Overhead Fee and Provost Fee from Program[4]	$	(27,060)
Program Result - Year 2	**$**	**111,591**

Year 3		20 Students
Total Course Revenues ($800 per credit for 30 credits per student)	$	480,000
Total Revenue and Local Fees[1]	$	(40,866)
COECS Course Revenues	**$**	**439,134**
Total Direct Expenses[2]	$	(141,750)
Total Indirect Expenses[3]	$	(70,200)
Total Auxiliary Overhead Fee and Provost Fee from Program[4]	$	(30,076)
Program Result - Year 3	**$**	**197,108**

COECS Program Result - First 3 Years	**$**	**323,352**
FAU 3 Year Revenue from Rev Fees/Local Fees/Aux. Overhead/Provost Fee	**$**	**174,549**
Yearly Program Result Year 4 and thereafter	**$**	**261,045**

We expect the College of Engineering and Computer Science to spend 80% of the yearly cash balance adding additional overhead revenues to the University.

Budget Details:

[1]Revenue and Local Fees:
  - Local fees per credit for athletics ($19.27), financial aid ($15.18), activity & service ($12.32), health ($9.42), capital improvement ($6.76), technology ($5.16)
  - Gross revenue fee at 0% for the first three years, then 5.5% from year 4

[2]Direct Expenses:
  - Faculty salary at $9,000 per class plus FICA
  - Meals expense at $40 per day on weekends per student
  - Books, materials and parking estimated at $145.00 per student per class

[3]Indirect Expenses:
  - Coordinator at $40,200 per year for admissions, registration, and student services (total S&B is $60,300 to be split across several programs)
  - Recruiting and marketing expense at $20,000 per year for the first two years and $30,000 per year thereafter for flyers, online advertisements, etc.

[4]Aux Overhead and Provost Fees:
  - Provost fee at 3% of expenditures
  - Auxiliary overhead fee at 11.19% of expenditures