

**Board of Governors Staff Analysis:
M.S. in Applied Data Science, CIP 11.0104
New College of Florida
REVISED 3/6/2021**

Program	M.S. in Applied Data Science
CIP Code	11.0104
Institution	New College of Florida
Proposed Implementation Date	Fall 2021
Staffed By	Brittanian K. Gamble
Initial Review Date	2/17/21

Projected FTE and Headcount

	Student Headcount	Student FTE
Year 1	24	24
Year 2	48	36
Year 3	49	37
Year 4	50	38
Year 5	52	40

Projected program costs

Total		Percentage & Dollar Amount					Auxiliary Funds	Cost per FTE	SUS 19-20 Average Cost per FTE
		Current Reallocated	New Recurring	New Non-Recurring	Contracts & Grants	Philanthropy & Endowment			
Year 1	\$422,000	100% \$422,000	0% \$0	0% \$0	0% \$0	0% \$0	\$0	\$17,583	\$23,850 11 CIP
Year 5	\$563,000	100% \$563,000	0% \$0	0% \$0	0% \$0	0% \$0	\$0	\$14,075	

Proposal Page Numbers

INTRODUCTION		ACCOUNTABILITY		READINESS				
Program Description	BOG Goals	Overall	Budget	Mission & Strength	Program Quality	Curriculum	Faculty	Resources
2-3	3-4	4-12	12-17	20-21	23-24	24-35	35-37	37-40

A. Program Description:

New College of Florida (New College) is proposing a Master of Science (M.S.) in Applied Data Science (CIP 11.0104). The proposed program is designed to provide students with a foundation and practical experience in machine learning, data mining, algorithms, modeling, statistics, and analytics. Students will be able to help businesses collect, manage, analyze, and interpret data. The new program will use a combination of classroom instruction and hands-on experiences to equip students with the hard and soft skills needed to solve complex problems in various fields. The 36 credit hour program will include a boot camp, seminars, and two practicum experiences. The institution will charge the currently approved graduate tuition rate of \$474.33 per credit hour for resident students and \$1,169.47 per credit hour for non-resident students. Additionally, the per-semester fees include the following: \$19.90 student financial aid fee for both residents and non-residents; \$33.10 non-resident financial aid fee; \$6.30 student health services fee; \$8.71 intercollegiate athletics fee; \$19.90 technology fee; and a \$1.00 Green Fee.

The M.S. in Applied Data Science offers two admission pathways. By removing prerequisites and requiring an Introduction to Data Science boot camp, individuals with a bachelor's degree in any field can apply to the program. The program will also offer a 3+2 option, an accelerated graduate degree option where New College undergraduates complete the Bachelor of Liberal Arts in any concentration and the Masters in Applied Data Science within five years. A minimum of 36 semester credit hours (SCH) of graduate-level work is required to complete the program. The curriculum includes 11 content-based courses (33 SCH), one for-credit industrial practicum (3 SCH), one zero-credit industrial practicum, and five zero-credit boot camp/seminar/workshop courses. Students entering through the 3+2 option will start taking graduate-level courses during their junior year and will not be required to complete the boot camp. There are no restricted or unrestricted electives or thesis requirements for the program. If approved by the Board of Governors, this program will begin enrolling students in fall 2021.

B. System-Level Analysis and Evaluation in accordance with BOG Regulation 8.011:

Strategic Plan Alignment:

The Master of Science in Applied Data Science program supports both New College's mission and the Board of Governor's Strategic Plan. Specifically, the proposed program directly supports New College's mission to offer a liberal arts education that integrates knowledge and skills across the humanities, arts, natural sciences, social sciences, and information sciences. The program aligns with the key goals of a liberal arts education through framing questions, working in teams, communicating results, and making ethical decisions. Additionally, the program will help New College of Florida increase enrollment and lower its cost-per-degree, which are two fundamental goals of the New College Strategic Plan.

The proposed program also aligns with the Board of Governors 2025 Strategic Plan. The M.S. in Applied Data Science, which qualifies as a program of strategic emphasis, will increase the number of degrees awarded in STEM. In addition to increasing the degree productivity, the 3+2 option for New College undergraduates will improve program efficiency. Since students will be working with real-world data sets, the program will also be meeting the strategic goals of strengthening the quality and recognition of the community commitment and business engagement. Lastly, through the applied nature of the program and the ability to work with real-world data sets, students and faculty may increase research productivity.

Need for Graduates in the Labor Market:

Although Data Science is an emerging field, the proposal documents the national and local need for data scientists. The proposal notes that computing and mathematics occupations are among the fastest-growing occupations in Florida, with a growth rate of 14.5%¹. Nationally, the growth rate is 15%². According to LinkedIn's *2020 Emerging Jobs Report*, Data Scientist is ranked #3 behind Artificial Intelligence Specialist and Robotics Engineer³.

Board staff conducted an independent analysis of the workforce demand. Table 1 provides an overview of occupations in CIP code 11.0104, which show faster than average growth for related fields. The United States Department of Labor's Bureau of Labor Statistics (BLS) lists Data Science as one of the fastest-growing occupations in the United States, with a job growth rate of 31%⁴. The BLS also reports that the 2019 median wage for data scientists was \$94,280.

To further assess the need for big data analysts, Board staff conducted a search on Indeed.com on March 5, 2021. The search yielded over 15,000 job postings. In Florida alone, there were over 373 openings. For example, Amerant Bank seeks a business data scientist to develop predictive and descriptive models to target customers' needs. Lockheed Martin has an opening for a Machine Learning Engineer to develop applications that impact workflow. Royal Caribbean Cruises has an opening for an individual to develop data-driven solutions to improve the customer experience. All three positions required or preferred a master's degree and a year or two of experience. Since of the proposed program's applied nature and the required practicums, graduates of the program will be well-positioned to apply for these types of openings.

Student Demand for the Program:

Although there are four other data science-related master's programs in the System, this will be the first master's level program in CIP 11.0104. New College based their student demand for the master's program enrollment growth in undergraduate programs including computer science, statistics, and data science. Since 2014, New College noted an increase of 71% per year of individuals graduating with a concentration in computer science or statistics. Additionally, New College's Center for Career Engagement and Opportunity administered a career planning survey and found that, over the last four years, more than five members of each graduating class indicated they would be interested in a master's level program in data science. In addition to New College graduates, the institution anticipates enrolling eight students from Florida, seven out-of-state students, and four international students in year one based on market research conducted in 2019.

Overall Summary and Board Staff Comments:

The proposed M.S. in Applied Data Science will equip students with technical skills, soft skills, and the industry experience needed for success in applied data science. The program aligns with New College's strengths and with the State University System's strategic planning goals. Board staff have no concerns regarding the proposed program and support moving forward for consideration by the Board of Governors.

¹ Florida Department of Economic Opportunity, 2019

² U.S. Bureau of Labor Statistics – <https://www.bls.gov/ooh>

³ LinkedIn 2020 Emerging Jobs Report – https://business.linkedin.com/content/dam/me/business/en-us/talent-solutions/emerging-jobs-report/Emerging_Jobs_Report_U.S._FINAL.pdf

⁴ U.S. Bureau of Labor Statistics – <https://www.bls.gov/ooh/fastest-growing.htm>

Table 1: Labor Market Demand, CIP Code 11.0104

CIP2020 Code	Occupations	FL Change, 2020-28 Percent	National Change, 2019-29 Percent	FL Total Annual Average Job Openings	National Openings, 2019-29 Annual Average	FL Change, 2020-28 Number	National Change, 2019-29 Number	BLS Typical education needed for entry
11.0104	Computer and Information Research Scientists	5.1	15.4	52	3,000	31	5,000	Master's degree
	Software Developers-Applications	15.5	Not available	3,952	Not available	6,415	Not available	Bachelor's degree
	Software Developers Systems Software	14.6	Not available	1,779	Not available	2,762	Not available	Bachelor's degree
	Statisticians	37	34.6	94	4,900	253	14,800	Master's degree
	Management Analysts	17.8	10.7	7,053	87,100	10,072	93,800	Bachelor's degree
	Market Research Analysts and Marketing Specialists	25	17.7	5,396	84,200	9,223	130,300	Bachelor's degree
	Financial and Investment Analysts	10.5	Not available	1,473	Not available	1,504	Not available	Not available

Note: Data science is an evolving field, and the U.S. Department of Labor is still in the process of refining the market demand data for occupations that link to this field.

Sources:

Date Retrieved: 3/6/2021

U.S. Bureau of Labor Statistics – <https://data.bls.gov/projections/occupationProj>

Florida Department of Economic Opportunity - <http://www.floridajobs.org/labor-market-information/data-center/statistical-programs/employment-projections>

C. Assessment of the University Review Process in accordance with BOG Regulation 8.011:

Due to the system of stair step accountability set in place by the Board of Governors in Regulation 8.011, it is now incumbent upon University Board of Trustees to verify that all doctoral programs coming before the Board of Governors have met the requirements of the regulation. The following is an assessment of the university review process to ensure that all criteria set forth have been considered by the university prior to submission to the Board of Governors office.

ACCOUNTABILITY

Check 'yes' or 'no' box, and make comments beneath criterion as appropriate.

1. Overall – *The proposal is in the correct format, includes all necessary signatures, and contains complete and accurate tables for enrollment projections, faculty effort, and the proposed budget.*

YES NO

 The proposal has been approved by the university board of trustees and includes all required signatures.

The program proposal was approved at the February 11, 2020, Board of Trustees meeting.

 The university has provided a proposal written in the standard SUS format, which addresses new academic program approval criteria outlined in BOG Regulation 8.011.

The institution submitted the proposed program in the standard SUS format.

 The pre-proposal was reviewed by the Council of Academic Vice Presidents (CAVP) workgroup and any concerns identified by the group have been listed and addressed in the proposal.

The pre-proposal was reviewed by the CAVP Academic Coordination Group on September 24, 2020. No concerns were expressed.

 The university has provided data that supports the need for an additional program in the State University System as well as letters of support or concern from the provosts of other state universities with substantially similar programs.

The proposed program would be the first master's-level program in CIP 11.0104.

 The university has provided complete and accurate projected enrollment, faculty effort, and budget tables that are in alignment with each other.

The institution submitted all required tables in Appendix A and provided supplemental information.

- The university has included a statement in the proposal signed by the equity officer as to how this proposal will meet the goals of the university's equity accountability plan.**

The Equal Opportunity Officer signed the proposal on November 30, 2020.

- The program does not substantially duplicate programs at FAMU or FIU or, if it does, evidence was provided that consultations have occurred with the affected university on the impact of the new program on existing programs.**

The proposed program does not duplicate an existing program at Florida Agricultural and Mechanical University nor Florida International University.

2. Budget – *The proposal presents a complete and realistic budget for the program consistent with university and BOG policy, and shows that any redirection of funding will not have an unjustified negative impact on other needed programs.*

YES NO

- The University Board of Trustees has approved the most recent budget for this proposal.**

The budget for the proposed program was approved in conjunction with the full proposal by the Board of Trustees on February 11, 2020.

- The university has reviewed the budget for the program to ensure that it is complete and reasonable, and the budget appears in alignment with expenditures by similar programs at other SUS institutions.**

The cost per FTE for the proposed program is aligned with the 2019-2020 SUS expenditure analysis for graduate programs in the CIP 11 family.

- The proposal indicates that the program will follow the cost-recovery or market-rate funding models. If so, details and timelines for getting approvals for these funding models are included in the proposal.**

The proposed program will not operate using a cost-recovery or market-rate funding model. It will utilize E&G funding for the program.

- In the event that resources within the institution are redirected to support the new program, the university has identified this redirection and determined that it will not have a negative impact on undergraduate education, or the university has provided a reasonable explanation for any impact of this redirection.**

The institution anticipates that implementation of the program will yield no negative impact on related programs.

READINESS

Check 'yes' or 'no' box, and make comments beneath criterion as appropriate.

3. Program Quality – *The proposal provides evidence that the university planning activities have been sufficient, and responses to any recommendations to program reviews or accreditation activities in the discipline pertinent to the proposed program have been addressed.*

YES NO

- The university has followed a collaborative planning process for the proposed program in accordance with policies and procedures adopted by the University Board of Trustees.**

The institution provided a narrative and chronological table of events that occurred during the development of the proposal as well as a list of the campus constituents involved. Additionally, the institution provided a table of events necessary for the implementation of the proposed program.

- An external consultant has reviewed the proposal and supports the department's capability of successfully implementing this new program.**

The proposed program is a master's program and does not require a review by an external consultant.

- The university has found the level of progress that the department has made in implementing the recommendations from program reviews or accreditation activities in the discipline pertinent to the proposed program to be satisfactory.**

The department has met all recommendations from program review activities in disciplines related to the proposed program.

- The university has analyzed the feasibility of providing all or a portion of the proposed program through distance learning.**

The program will be offered through traditional delivery with all core and general elective courses being taught on the main campus and practicum courses being offered remotely or at the company site.

- If necessary, the university has made allowances for licensure and legislative approval to be obtained in a timely manner.**

There is no applicable licensure or legislative approval required for the proposed program.

4. Curriculum - *The proposal provides evidence that the university has evaluated the proposed curriculum and found that it describes an appropriate and sequenced course of study and that the university has evaluated the appropriateness of specialized accreditation for the program.*

YES NO

- The university has reviewed the curriculum and found that the course of**

study presented is appropriate to meet specific learning outcomes and industry-driven competencies discussed in the proposal.

The institution has provided the curriculum for the proposed program, and the coursework is designed to meet the learning outcomes for the degree.

- The university anticipates seeking accreditation for the proposed doctoral program or provides a reasonable explanation as to why accreditation is not being sought.**

There are no specialized accrediting bodies available for graduate programs in Data Science.

5. Faculty – *The proposal provides evidence that the university is prepared to ensure a critical mass of faculty will be available to initiate the program based on estimated enrollments and that faculty in the aggregate have the necessary experience and research activity to sustain a doctoral program.*

YES NO

- The university has reviewed the evidence provided and found that there is a critical mass of faculty available to initiate the program based on estimated enrollments.**

The institution has identified six existing faculty members who will participate in the proposed program. The institution will hire one additional faculty member, and all faculty are anticipated to begin participating in the program in fall 2021.

- The university has reviewed the evidence provided and found that the faculty, in aggregate, has the necessary experience and research activity to sustain the program.**

The institution reviewed the credentials of all faculty members participating in the program, and their curriculum vitae were included in Appendix C of the proposal.

- The university has reviewed the evidence provided and found the academic unit(s) associated with this new degree to be productive in teaching, research, and service.**

The institution provided multiple examples showing that the academic unit associated with the proposed degree program has been productive in teaching, research, and service.

- If appropriate, the university has committed to hiring additional faculty in later years, based on estimated enrollments.**

The institution will hire one faculty member to participate in the program in fall 2021.

6. Resources – *The proposal provides evidence that the university has ensured the available library volumes and serials; classroom, teaching laboratory, research laboratory, office space, equipment, clinical and internship sites, fellowships, scholarships, and graduate assistantships will be sufficient to initiate the program, and that if applicable, funding has been secured to make more resources available as students proceed through the program.*

YES NO

- The university has provided a signed statement from the Library Director verifying that the library volumes and serials available are sufficient to initiate the program.**

The Library Director signed the proposal on October 19, 2020.

- The university has ensured that the physical space necessary for the proposed program, including classrooms, laboratories and office space, is sufficient to initiate the program.**

The institution provided descriptions of the physical spaces available to the program. The program has adequate space to implement and sustain the proposed program through year 5.

- The university has ensured that necessary equipment is available to initiate the program.**

New College has provided examples of equipment that are available to support the instruction and research of the proposed program.

- The university has ensured that fellowships, scholarships, and graduate assistantships are sufficient to initiate the program.**

This is not applicable to this program.

- If applicable, the university has ensured that the department has arranged a suitable number of clinical and internship sites.**

The program includes two practicum experiences, and the institution has ensured that a suitable number of internship sites are available to meet the curricular needs of the program.