This Program Change form will enable you to propose several types of changes to any existing program. You may propose changes to an existing program's:

- Title
- Description
- Requirements
    - Admission Requirements
    - Prerequisites
    - Required courses
    - Elective courses
    - Graduation requirements

In addition, this program change form should be used to propose a new major or track (or specialization, concentration, area of emphasis). Each of these types of programs is defined by the Board of Governors (BOG) of the State University System of Florida, in its Regulation 8.011 Academic Degree Program Coordination and Approval. These definitions are outlined in FIU Policy 350.010 Academic Degree Program Coordination and Approval.

- **Program Major**: An organized curriculum offered as part or all of an existing or proposed degree program. A major must be reasonably associated with the degree program under which it is offered and share a minimum of 15% of core courses with other majors within the same degree program. For an undergraduate degree, each major requires completion of a minimum of 30 credits (including core courses). Graduate degrees typically focus only on the specific discipline; therefore, there is no minimum credit requirement for graduate majors. There are cases where the major and degree program names are identical, thus creating only one major.
- **Program Track (or Specialization, Concentration, Area of Emphasis)**: An organized curriculum, offered as part of an individual student's degree program, which enhances or complements the degree to be awarded in a manner that leads to specific educational or occupational goals. In order to establish some uniformity across degree programs, this level of categorization should be termed a track unless a different terminology is required for accreditation or discipline purposes. The number of credit hours of a track, specialization, concentration, or area of emphasis shall not equal or exceed the number of credit hours established for a program major at the same degree level.

Standing committees of the FIU Faculty Senate will review these changes. The members that comprise these governing bodies may not understand the nuances of your department or academic discipline. Therefore, you will be required to provide a justification for the changes you are proposing. The

committees request that justifications be specific and written for an audience that is unfamiliar with your department and program.

Program & Proposal Type 4
Which type of program do you propose changing? 4
Select each type of change you are proposing to an existing program. (You may propose more than one type of change/ addition.) 4
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Please provide a justification for the changes you are proposing. 4
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If courses are not in the current catalog, are they currently in the workflow process? 6
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Are all courses to be added taught in the same proposing department? 6
Are courses to be deleted taught in the same proposing department? 6
If no, provide written approval/acknowledgment of the other department(s). 6
Does this change affect the courses measuring Student Learning Outcomes (SLOs) or Program Outcomes (POs) for the program? 6
Please upload your revised Student Learning Outcomes (SLOs) and/or Program Outcomes (POs). 6
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Program & Proposal Type

Which type of program do you propose changing?
Degree Program

Select each type of change you are proposing to an existing program. (You may propose more than one type of change/ addition.)
Program Requirements

Justification

Please provide a justification for the changes you are proposing.
Proposal Justification for Adding Additional Statistics Courses to the BS in Data Science and AI at FIU

The current flowchart for the BS in Data Science and AI program at FIU lists STA 3163 (Statistical Methods I), STA 3111 (Statistics I), and STA 2023 (Statistics for Business and Economics) as the acceptable statistics courses. While these courses are foundational and aligned with the program's needs, students often enter the program with equivalent training in statistics through other courses tailored to their original disciplines. Examples of such courses include:
• STA 3033: Introduction to Probability and Statistics for Computer Science
• STA 2122: Statistics for Behavioral and Social Sciences I
• STA 3145: Statistics for the Health Professions
• STA 3193: Statistics for Biology I
• STA 4322: Mathematical Statistics I

These courses all cover core concepts essential for data science, such as descriptive statistics, probability theory, hypothesis testing, and regression analysis, ensuring students possess the necessary skills to succeed in the program.

Rationale for Expanding the List of Statistics Courses
1. Accommodating Diverse Student Backgrounds
Students interested in the BS in Data Science and AI come from a wide range of disciplines, including biology, behavioral sciences, health sciences, and engineering. Many of these disciplines require specific statistics courses relevant to their fields, which provide equivalent training in fundamental statistical concepts. Recognizing these courses ensures that the program is inclusive and accessible to students with diverse academic backgrounds.
2. Reducing Unnecessary Barriers to Entry
Restricting the acceptable statistics prerequisites to a narrow set of courses may unintentionally disqualify otherwise capable students. For example, a biology student who has completed STA 3193 (Statistics for Biology I) has the foundational knowledge needed for the program but might face delays or additional costs to meet the prerequisite. Allowing these equivalent courses reduces unnecessary

administrative burdens on advisors and eliminates barriers for students transitioning into the major.
3. Ensuring Alignment with Program Goals
All proposed additional courses cover key statistical concepts critical to data science, including:
o Descriptive and inferential statistics
o Probability distributions
o Hypothesis testing
o Linear regression
These topics form the backbone of data science and AI methodologies, ensuring that students are well-prepared for the program's demands.
4. Reflecting the Interdisciplinary Nature of Data Science
Data science is inherently interdisciplinary, often requiring collaboration across fields. By acknowledging equivalent statistics courses from various disciplines, the program reinforces its commitment to interdisciplinary learning and application, which aligns with the evolving demands of the field.

Proposal for Program Update

We propose updating the program to include STA 3033, STA 2122, STA 3145, STA 3193, and STA 4322 as additional acceptable statistics courses in the BS in Data Science and AI flowchart. This update ensures:
• Seamless transitions for students with equivalent training in statistics.
• Reduced administrative complexity for advisors in evaluating course equivalencies.
• A broader pool of eligible students, fostering diversity and inclusion within the program.

Implementation Plan
• Update the flowchart and catalog to explicitly list these courses as acceptable options.
• Communicate the changes to advising staff to ensure consistent application during course evaluations.
• Include equivalency notes in student advising materials to provide clear guidance.

By incorporating these additional statistics courses, the BS in Data Science and AI program will better reflect the interdisciplinary nature of data science, reduce barriers for incoming students, and ensure that all students have a strong foundation in statistical methods critical to the field. This change aligns with the program’s commitment to inclusivity and academic excellence, ensuring its continued relevance and accessibility in preparing students for careers in data science and AI.

Effective term

Proposed program changes will become **effective the next academic year**.

For example: changes submitted in 2024-25 will become effective in 2025-26.

Questions Specific to the List of Courses Required for this Program

If proposing additional courses, do all courses exist in the current catalog?
Yes

If courses are not in the current catalog, are they currently in the workflow process?
No

New Course Form
Please submit a New Course Form for the courses you wish to propose.

Are all courses to be added taught in the same proposing department?
Yes

Are courses to be deleted taught in the same proposing department?
Yes

If no, provide written approval/acknowledgment of the other department(s).
-

Does this change affect the courses measuring Student Learning Outcomes (SLOs) or Program Outcomes (POs) for the program?
No

Please upload your revised Student Learning Outcomes (SLOs) and/or Program Outcomes (POs).
-

Catalog Fields

Current Program Title
Bachelor of Science in Data Science and Artificial Intelligence

Proposed Program Title
-

Current Program Description
Students who decide to pursue a Bachelor of Science in Data Science and Artificial Intelligence at Florida International University will be given a broad foundation in the fast-evolving fields of data science and AI. This degree program will prepare learners with the skills to analyze and interpret complex data, develop algorithms, and build AI systems that can think and learn. Students will explore key concepts in machine learning, neural networks, statistical modeling, and computational problem-solving. Upon completion, graduates are well-prepared to pursue careers in data science, technology, finance, healthcare, robotics, bioinformatics, and many other industries, or to continue their studies in advanced degree programs. This program not only opens up numerous job opportunities but also provides the analytical foundation necessary to drive innovation and decision-making in a data-driven world.

Proposed Program Description
-

Current Program Website
Program website

Proposed Program Website Change
-

Requirements

Simple Requisites

Admissions Requirements

Students must follow regular University admission procedures and upon admission declare their specific major as Data Science and Artificial Intelligence.

Program Requirements

Academic Progression Requirements

All required courses must be completed with a grade of "C" or better. All students must participate in Knight Foundation School of Computing and Information Science assessment activities and successfully complete an exit interview prior to graduation.

Lower Division Preparation
Type
Prerequisite

Common Prerequisite Courses

-

Complete ALL of the following Courses:

- MAC2311 - Calculus I
- MAC2312 - Calculus II
- MAS3105 - Linear Algebra
  OR MAC2313 - Multivariable Calc
  OR COT3510 - Applied Linear Structures for Computing
- COP2047 - Python Programming I
- BSC2010 - General Biology I
  AND BSC2010L - General Biology I Lab
- PHY2048 - Physics with Calculus I
  AND PHY2048L - General Physics Laboratory I
- STA2023 - Statistics for Business and Economics
  OR STA3111 - Statistics I
  OR STA3163 - Statistical Methods I

Students may take any COP2XXX-X999 Computer Programming course at FIU in place of COP2047

Students may take any Natural Science Group 1 or Group 2 course with lab or BSC 2010/L.

Additional Comments:

-

Upper-Division Requirements

At least 50% of the upper division credits required for the BA in Computer Science must be taken at FIU.

Upper Division
Type
Completion Requirement

Degree Program Credit Hours: 120

The Bachelor of Science in Data Science and Artificial Intelligence program will comprise 120 credit hours and will offer students the option to pursue one of the concentrations: Computational and Big Data Analytics, Artificial Intelligence and Robotics, and Statistical Modeling.

Fulfill ALL of the following requirements:

Required Courses: 36 credits

Complete ALL of the following Courses:

- CTS1500 - Emerging Topics in Digital Life
- COP3410 - Computational Thinking
- CAP2757 - Introduction to Data Science
- COP3045 - Python Programming II
- CGS3095 - Technology in the Global Arena
- COT3100 - Discrete Structures
  OR MAD2104 - Discrete Mathematics
- ENC3249 - Professional and Technical Writing for Computing
- COP3465 - Data Structures It
- CAP3764 - Advanced Data Science
- CIS3950 - Capstone I
- CAP4630 - Artificial Intelligence
- CIS4951 - Capstone II
- CAP4612 - Introduction to Machine Learning

Elective Courses

Students may broaden their expertise by selecting electives from the up-to-date list of elective courses maintained by the Knight Foundation School of Computing and Information Sciences. For more details and to view the lists of electives (and determine pre-requisites), please visit: KFSCIS's Electives Page for BS in DS & AI.

Concentration Courses: 12 credits

Students complete 4 courses within one concentration, or students complete 4 courses from any of the concentrations:

- **Computational and Big Data Analytics**
- **Artificial Intelligence and Robotics**
- **Statistical Modeling**

Earn at least 12 credits

-

Additional Comments:

-

Major Requirements

There are no majors associated with this program.

Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering Requirements

Concentration in Computational and Big Data Analytics

Strong emphasis on developing programming and analytical skills, as well as gaining a solid understanding of computer science principles, and encourages students to apply the latest technologies in data storage, manipulation, security, retrieval, mining, machine learning, AI, and cloud computing.

Concentration in Computational and Big Data Analytics: 12 credits
Type
Completion Requirement

Computational and Big Data Analytics Courses

-

Complete at least 4 of the following courses:

- CAI4203 - Introduction to Deep Learning
- CAP4770 - Introduction to Data Mining
- COP4534 - Algorithm Techniques
- COT4431 - Applied Parallel Computing
- CEN4083 - Introduction to Cloud Computing
- COP4703 - Information Storage and Retrieval Concepts

-

Additional Comments:

-

Concentration in Artificial Intelligence and Robotics

Developing algorithms and computational techniques to enable machines to learn, reason, and adapt, empowering them to solve complex problems and enhance decision-making processes.

Concentration in Artificial Intelligence and Robotics: 12 credits
Type
Completion Requirement

Artificial Intelligence and Robotics Courses

-

Complete at least 4 of the following courses:

- CAP4770 - Introduction to Data Mining
- CAP4641 - Natural Language Processing
- CAP4453 - Introduction to Robot Vision
- CDA4625 - Introduction to Mobile Robotics
- CAI4203 - Introduction to Deep Learning
- CAP4506 - Introduction to Game Theory

-

Additional Comments:

-

Concentration in Statistical Modeling

Statistically driven decision making with emphasis on mathematical theory that underlies the models and programming.

Concentration in Statistical Modeling: 12 credits
Type
Completion Requirement

Statistical Modeling Courses

-

Complete at least 4 of the following courses:

- CAP4830 - Fundamentals of Modeling & Simulations
- STA3164 - Statistical Methods II

- STA4234 - Introduction to Regression Analysis
- MAD3301 - Graph Theory
- MAD3401 - Numerical Analysis
- CAP4770 - Introduction to Data Mining

**STA3164: Prerequisite course is STA3163.*

Additional Comments:

-

No Requirement Level

Admission Requirements Changes

Instructions
To propose changes to existing catalog text, first select the " + Add New" button below. A text box will appear. Then, copy the existing Admissions Requirements text from the Admissions Requirements section above and paste the text in the text box below.

In the text box, use your cursor to select (i.e., highlight) the text you want to change. Use the strikethrough icon to denote deletions of text and the underline icon to denote added text.

If there are any courses referenced as requirements for admissions, any additions should be added using the "Embed Course Link" (book icon) in the toolbar above. Click the icon. Then, search using the prefix and number of the course you wish to add. Then click "Embed Link".

If you are trying to add a course that has been deactivated, it must be reactivated before submission of this proposal.

Changes

-

Program Requirement Changes

Instructions

To propose changes to existing catalog text, first select the " + Add New" button below. A text box will appear. Then, copy the existing Program Requirements text from the Program Requirements section above and paste the text in the text box below.

In the text box, use your cursor to select (i.e., highlight) the text you want to change. Use the strikethrough icon to denote deletions of text/courses and the underline icon to denote added text.

For additional courses, use the "Embed Course Link" (book icon) in the toolbar above. Click the icon. Then, search using the prefix and number of the course you wish to add. Then click "Embed Link".

If you are trying to add a course that has been deactivated, it must be reactivated before submission of this proposal.

Lower Division Preparation

Common Prerequisite Courses

Complete ALL of the following Courses:

- MAC2311 - Calculus I
- MAC2312 - Calculus II
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- PHY2048 - Physics with Calculus I
  AND PHY2048L - General Physics Laboratory I
- STA2023 - Statistics for Business and Economics
  OR STA3111 - Statistics I
  OR STA3163 - Statistical Methods I

OR STA3033 - Introduction to Probability and Statistics for Computer Science

OR STA2122 - Statistics for Behavioral and Social Sciences I

OR STA3145 - Statistics for the Health Professions

OR STA3193 - Statistics for Biology I

OR STA4322 - Mathematical Statistics I

Students may take any COP2XXX-X999 Computer Programming course at FIU in place of COP2047

Students may take any Natural Science Group 1 or Group 2 course with lab or BSC 2010/L.

Major Requirements

Instructions
This section allows you to make "changes to a current major" or propose a "new major".

To propose **changes** to the catalog information for an existing major(s):

1. Select "**Change(s) to a current major**" in the drop down below.
2. Use the "+ Add New" button and a text box will appear.
3. Copy the existing Major Requirements text from the Major Requirements section above and paste in the text box.
4. In the text box, use your cursor to select (i.e., highlight) the text you want to change. Use the strikethrough icon to denote deletions of text/courses and the underline icon to denote added text.
5. For additional courses, use the "Embed Course Link" (book icon) in the toolbar above. Click the icon. Then, search using the prefix and number of the course you wish to add. Then click "Embed Link".

   If you are trying to add a course that has been deactivated, it must be reactivated before submission of this proposal.
6. Repeat steps 2 - 5 for each major which requires changes.

To propose a **new major(s)** in this degree program:

1. Select "**New major**" in the drop down below.
2. Use the "+ Add New" button.
3. Complete all the required fields.
4. In the Major Requirements field, provide a detailed course listing and any specifics regarding course requirements.
5. For each course, use the "Embed Course Link"(book icon) in the toolbar above. Click the icon. Then, search using the prefix and number of the course you wish to add. Then click "Embed Link".

   If you are trying to add a course that has been deactivated, it must be reactivated before submission of this proposal.
6. Repeat steps 2 - 5 for each additional new major.

Using the drop down menu below, please select the changes you would like to make.

Change(s) to a Current Major

-

New Major(s)

-

Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering Requirement

Instructions
This section allows you to make "Change(s) to a current Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering Requirement" or propose a "New Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering".

To propose **changes** to the catalog information for an existing Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering(s):

1. Select "**Change(s) to a current Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering Requirement**" in the drop down below.
2. Use the "+ Add New" button and a text box will appear.
3. Copy the existing text from the Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering Requirements section above and paste in the text box.
4. In the text box, use your cursor to select (i.e., highlight) the text you want to change. Use the strikethrough icon to denote deletions of text/courses and the underline icon to denote added text.
5. For additional courses, use the "Embed Course Link"(book icon) in the toolbar above. Click the icon. Then, search using the prefix and number of the course you wish to add. Then click "Embed Link".

   If you are trying to add a course that has been deactivated, it must be reactivated before submission of this proposal.
6. Repeat steps 2 - 5 for each offering which requires changes.

To propose a **new Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering (s)** in this degree program:

1. Select "**New Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering**" in the drop down below.
2. Use the "+ Add New" button.
3. Complete all the required fields.
4. In the Requirements field, provide a detailed course listing and any specifics regarding course requirements.
5. For each course, use the "Embed Course Link" (book icon) in the toolbar above. Click the icon. Then, search using the prefix and number of the course you wish to add. Then click "Embed Link".

   If you are trying to add a course that has been deactivated, it must be reactivated before submission of this proposal.
6. Repeat steps 2 - 5 for each additional new offering.

Using the drop down menu below, please choose the changes you would like to make.

-

Change(s) to a current Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering Requirement

-

New Track, Specialization, Concentration, Area of Emphasis, or Other Curricular Offering

-

SACSCOC Substantive Change

If you have any questions or concerns regarding SACSCOC and Substantive Change, please contact the Office of Academic Planning and Accountability.

Will additional facilities be needed to deliver the revised program?
No

If so, describe the additional facilities that will be needed.
-

Will additional equipment be needed to deliver the revised program?
No

If so, describe the additional equipment that will be needed.
-

Will additional financial resources be needed to deliver the revised program?
No

If so, describe the additional financial resources that will be needed.
-

Will additional library/learning resources be needed to deliver the revised program?
No

If so, describe the additional library/learning resources that will be needed.
-

Will new faculty need to be hired to deliver the revised program?
No

If so, describe the additional faculty resources that will be needed.
-

Will new content be required for the revised program?
No

If so, select the percentage of new content for the revised program.
-

Will some or all of the revised program be offered at a new location geographically apart from the Modesto A. Maidique Campus (or its Engineering Center)?
No

If so, select the percentage of the program that will be offered at a new location.
-

Enter the name of the location where the revised program will be offered.
-

Will the revised program be offered via a different method of delivery than is currently used?
No

If so, by which method of delivery will the revised program be delivered?
-

Select the percentage of the program that will be offered via distance education (i.e., online).
-

Will the revised program enter into a collaborative academic arrangement that includes the initiation of a dual academic program with another institution?
No

If so, with which institution will you collaborate in this dual academic program?
-

Will the revised program enter into a contract by which an entity not eligible for Title IV funding offers 25% or more of the program (e.g., international university)?
No

If so, with which entity will you contract?
-

Supporting Documentation

Please include additional relevant documentation.
DS-BS_Flowchart.pdf

Dependencies

FIU Acad Plan

fiuAcadPlan

Unit Cumulative Total
120

SAP Eligibility Percentage
0.5