DO NOT TYPE IN THIS BOX
Bulletin #: _____
Academic Year: _____

FLORIDA INTERNATIONAL UNIVERSITY
UNDERGRADUATE PROGRAM PROPOSAL

New *Undergraduate Degree Program*

INSTRUCTIONS: Please Type. Fill out this form **completely.**

School/College Arts, Sciences and Education

Div./Dept. Liberal Studies

Degree Program Title: Natural and Applied Sciences

☐ B.A. ■ B.S. ☐Other Bachelor's _____

Proposed Implementation Date: Fall 2019

PROPOSAL REQUESTED BY:

Faculty Contact	Bruce A. Harvey (Type Name)	Bruce A Harvey (Signature)	11 /30 /2018
	harveyb@fiu.edu (Email address)	954-756-3444 (Phone Number)	
Chair (Dept./Div.)	Bruce A. Harvey (Type Name)	Bruce A Harvey (Signature)	11 /30 /2018
Chair (Curr. Comm.)	Kenton Harris (Type Name)	(Signature)	12 /07 /2018
College/School Dean	Michael Heithaus (Type Name)	(Signature)	11 /30 /2018

JOINT HEARING REQUIRED. PLEASE SUBMIT ORIGINAL FORM.

DO NOT TYPE IN THIS BOX
Bulletin #: _____ Academic Year: _____

NEW *UNDERGRADUATE DEGREE*

PLEASE SUBMIT THIS FORM WITH YOUR PROPOSAL

Please fill out the coversheet in its entirety.

A new program must first be added by the Office of the Provost to the 5-year Master Plan for the University and must follow the process flow chart. The first step in this process is a Feasibility Study. After the program Feasibility Study is approved, the program proposal must adhere to the strict Proposal Format for a New Graduate Degree Program and must include the appropriate Tables. You may access these documents by visiting the Office of the Provost website here.

The proposal must include the following elements. All of these element topics, along with their details, are described in the proposal format document also available at the above link.

I. Degree Description - The structure of the New Degree must follow the Board of Governors Policy for New Degree Program Authorization.
II. Institutional Mission and Strength
III. Program Quality- Reviews and Accreditation
IV. Curriculum
V. Assessment of Current and Anticipated Faculty
VI. Assessment of Current and Anticipated Resources
VII. Assessment of Need and Demand
VIII. Budget
IX. Productivity
X. Access

CHECK LIST

		Yes	No
1.	Has a Feasibility Study been approved by the Office of the Provost?	✓	
2.	Have all the elements in I-X above been addressed along with tables?	✓	
3.	Do all courses exist in the current catalog?	✓	
4.	If courses are not in the current catalog, are they proposed in the same Curriculum Committee Bulletin as this proposal?	NA	
5.	If courses are not in the current catalog or proposed in this same Bulletin, were they approved in a previous curriculum bulletin? If yes, attach a separate sheet indicating each course number, name, Bulletin number and Bulletin date. If the answers to 1, 2, and 3 are no, do not submit the proposal. Address the course issues first.	NA	
6.	Do courses listed have the correct course prefixes, official titles, course numbers and number of credits?	✓	
7.	Do course descriptions match the existing catalog or proposed course descriptions?	✓	
8.	Are all courses to be added taught in the same proposing department?	NA	
	If the answer to #8 is no, do you have the written approval/ acknowledgment of the other department(s)? (You must have written approval before submitting this document.)	✓	
9.	The written approval(s)/acknowledgment(s) must be attached.	✓	
10.	Have you contacted assessment@fiu.edu to obtain approval of your Student Learning Outcomes and Program Outcomes? If not, please do so prior to submitting this form.	✓	

Board of Governors, State University System of Florida

Request to Offer a New Degree Program

(Please do not revise this proposal format without prior approval from Board staff)

Florida International University
University Submitting Proposal

Fall 2019
Proposed Implementation Term

College of Arts, Sciences and Education
Name of College(s) or School(s)

Liberal Studies
Name of Department(s)/ Division(s)

STEM
Academic Specialty or Field

B.S. Natural and Applied Sciences
Complete Name of Degree

30.0101
Proposed CIP Code

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met prior to the initiation of the program.

Date Approved by the University Board of Trustees	President	Date

Signature of Chair, Board of Trustees	Date	Vice President for Academic Affairs	Date

Provide headcount (HC) and full-time equivalent (FTE) student estimates of majors for Years 1 through 5. HC and FTE estimates should be identical to those in Table 1 in Appendix A. Indicate the program costs for the first and the fifth years of implementation as shown in the appropriate columns in Table 2 in Appendix A. Calculate an Educational and General (E&G) cost per FTE for Years 1 and 5 (Total E&G divided by FTE).

Implementation Timeframe	Projected Enrollment (From Table 1)	
	HC	FTE
Year 1		
Year 2		
Year 3		
Year 4		
Year 5		

Projected Program Costs (From Table 2)				
E&G Cost per FTE	E&G Funds	Contract & Grants Funds	Auxiliary Funds	Total Cost

Note: This outline and the questions pertaining to each section must be reproduced within the body of the proposal

to ensure that all sections have been satisfactorily addressed. Tables 1 through 4 are to be included as Appendix A and not reproduced within the body of the proposals because this often causes errors in the automatic calculations.

INTRODUCTION

I. Program Description and Relationship to System-Level Goals

A. Briefly describe within a few paragraphs the degree program under consideration, including (a) level; (b) emphases, including majors, concentrations, tracks, or specializations; (c) total number of credit hours; and (d) overall purpose, including examples of employment or education opportunities that may be available to program graduates.

The B.S. in Natural and Applied Sciences will be a multi-disciplinary STEM degree designed to attract and better foster students who wish to continue their natural and applied science studies in graduate and professional health programs (such as Occupational Therapy, Athletic Therapy, and Physical Therapy) as well as seek employment in the medical or engineering fields, or in crossover fields (e.g. Medical Device Design; Medical Data Analysis). This degree meets the CIP 30.0101 description: *"A program that is either a general synthesis of one or more of the biological and physical sciences, or a specialization which draws from the biological and physical sciences."*

The degree comprises a main B.S. umbrella, giving flexible student opportunity in health, technological/ engineering, and computational-intensive career fields; and a more specific "Medical Sciences" track intended for those students preparing for post-B.S. medical training per se. The degree will allow students to advance in fields where a broad knowledge in the STEM areas is required, such as crossover fields and careers that include a strong technological or math/computational component. It will also allow the flexibility needed to fulfill graduate program prerequisites, if needed. The umbrella requires no prerequisites (to ensure maximum articulation and efficiency, especially, between FIU and its AA community college feeders); the "Medical Sciences" track prerequisites, however, provide the appropriate sequences in biology, chemistry, and math. Both the umbrella and the track integrate with particular sub-infrastructure strengths at FIU: the quality and diversity of pre-medical instruction; the rich array of Nursing and health-subset instruction; the research-intensive and applied variants of Engineering and associated disciplines; and the many different strands of advanced "math" skill development

FIU's Biology Department recently has introduced several B.A. tracks: B.A. Allied Health Profession Track; B.A. Science Communication Track; B.A. Bioentrepreneur Track; and B.A. Health Policy, Env Policy, and Pre-Law Track. These tracks, in both intent and requirements, differ substantially from the proposed degree. The new Biology tracks are designed for dedicated Biology majors, who wish to pursue specific Biology-intensive-"plus" career options (e.g., Biology plus Science Communication); and, as such, preclude the more inclusive range of crossover, multi-disciplinary options that the proposed degree captures. Please see, additionally, section B(2) below: the proposed "B.S.: Natural and Applied Sciences" degree is at once more flexible, reduces excess-hour risk, and is a "B.S." degree per se. (Support communication is included from the Biology Department, emphasizing that their specialty B.A. tracks and the new degree, although serving different purposes, very much complement each other and provide, in total, avenues for enhanced student success.)

The strong intent of the proposed curriculum is to provide an on-ramp to an immediate post-B.S. job (without extending time-in-college) and yet also not foreclose later switching to other pathways to more advanced training or jobs. The degree will advance students as follows:

1. It will enable students to plan self-tailored science programs analogous to what FIU's highly successful Liberal and Interdisciplinary Studies programs have done for the Social Sciences and Humanities. (FIU revised its Liberal Studies program eight years ago; student enrollment has increased from approximately 600 students to 1800 students in the eight-year span.)
2. It will provide a counter-balance to the curricula of many of the existing science/techno-engineering programs that are dictated by professional societies resulting in lock-step and inflexible programs that impede graduation prospects of non-traditional students.
3. It will enable students to develop a self-directed program that will transcend the silos separating the traditional areas of the sciences (especially biology/medical), and technology and engineering.

Other SUS institutions (USF; NCF: UWF) have roughly kindred interdisciplinary STEM degrees, but such radiate out with intentional synergy differently (or more limitedly or with less volume) than FIU's proposed degree in the

larger context of FIU and its communities of educational service. The CIP nomenclature uses "interdisciplinary" as the key word; "intentional synergy," however, more accurately captures the design of the proposed degree.

Data shows that XX% of FIU STEM students change majors between their first and third years. Major-hopping and untimely graduation leads to, besides low student morale, excess credit hours. The go-to solutions have been 1) "exploratory" purgatory (students should not prematurely declare a major), 2) sweep-up "generalist" degrees, or, 3) students dropping out altogether with loss of their tuition investment and State investment-subsidizing. The proposed degree remedies by virtue of its contoured yet flexible STEM curricula trajectory (whether upon admission or subsequently), enhanced by advisors being able more efficiently to track student progress towards timely graduation, assist in retention, and help students avoid Excess Credit Surcharge issues. The total degree requires 120 credit hours.

Please see section II(A) below for specific data on the proposed degree's aptness in terms of labor and employment markets. To additionally highlight, the degree--besides being a gateway to these data-defined careers--is job-strategic in two ways:

1. Market-driven new program roll-out in the science disciplines presumes a) anticipated market growth (we will need more Pharmacologists or Electrical Engineers), or b) new sub-disciplines (Forensic Chemistry), or c) emergent crossover fields ("green" Engineers). The progression through a, b, and c is **at once more tightly niched and interdisciplinary skill open-ended** (we need students with degrees specifically in Forensic Chemistry but we also need Engineers that can think about ecological-disaster mitigation or Engineers that can think about the aesthetics of medical device design). The proposed degree takes into account these a, b, and c variables.

2. The degree also takes into account the complex tension between students who aspire to, and are capable of, very high-end specific training and careers, but who, for various reasons, wish to secure after a four-year degree what once was called a "vocational" occupation and yet at a more sophisticated level than possible with an AA/community college degree. Examples of such professionalized "vocational" jobs, accordingly: a student in the umbrella main B.S. will obtain the course-knowledge to be a viable candidate for advanced health-field degrees and yet because the track does not pre-suppose he or she will "go" into a health field, elective-management (through the FIU advising system or through student self-selection) will allow a wide-range of potential alternatives, such as Sports-Health Management, or Community-Care Data Analysis, and so on.

B. Please provide the date when the pre-proposal was presented to CAVP (Council of Academic Vice Presidents) Academic Program Coordination review group. Identify any concerns that the CAVP review group raised with the pre-proposed program and provide a brief narrative explaining how each of these concerns has been or is being addressed.

The pre-proposal was presented by Susan Himburg (Associate Vice President for Academic Planning & Accountability) and Elizabeth Bejar (Vice President of Academic Affairs) at the CAVP meeting on Friday, September 28, 2018. Although no concerns were raised during the phone call, UCF sent an email with the following two concerns:

1) They expressed concern about which of the 17 tracks in the common prerequisite manual we would choose. At the time of the call, the pre-proposal did not include that information since the curriculum had not yet been built. At this point, however, we have opted to go with Tracks 1 and 16. Track 16, which has no prerequisites, will be used for the umbrella degree. Students will have the option to complete the umbrella degree (B.S. in Natural and Applied Sciences) or select the Medical Sciences track, which will follow Track 1 of the Common Prerequisite Manual.
2) Although UCF did not have concerns with the general idea of the degree, they questioned why FIU's current Interdisciplinary degree was not being used as the "host" for the new degree. FIU's current Interdisciplinary degree is offered as a Bachelor of Arts degree. Its focus, although interdisciplinary as the name suggests, does not have a STEM focus, but rather more of a focus on the humanities and social sciences. We have a population of students who are interested in taking courses across all sciences disciplines; however, the B.A. does not appeal to them because: 1) it is a B.A. and 2) it is not a STEM degree. Many of these students would--had FIU included a quasi-STEM track within the current

Interdisciplinary Studies B.A.--have been obliged to take non-relevant courses and this accrue excess credits. The proposed B.S. degree affords students intentional latitude (for crossover training, especially), reduces the excess credit risk, and yet still awards them with a B.S. STEM degree.

C. If this is a doctoral level program please include the external consultant's report at the end of the proposal as Appendix D. Please provide a few highlights from the report and describe ways in which the report affected the approval process at the university.

Not applicable.

D. Describe how the proposed program is consistent with the current State University System (SUS) Strategic Planning Goals. Identify which specific goals the program will directly support and which goals the program will indirectly support (see link to the SUS Strategic Plan on the resource page for new program proposal).

The proposed degree correlates directly with the "Teaching and Learning" SUS Strategic Planning Goals, as follows:

1. Because of the degree's flexibility, more students from "traditionally under-represented groups, returning adult students, and distance learning students" will be able to efficiently complete STEM degrees without excess credit hours. Although the degree is not designated as an "online" degree, approximately 40% of the courses will have immediate online availability, with the percent climbing significantly over the next several years.

2. The degree (and its internal track) is STEM-emphatic, with anticipated high-volume B.S. degree completion-to-career (either immediately or in preparation for advanced training in health/medical fields especially). The degree is explicitly structured to fulfill the SUS strategic priority for a "Knowledge Economy." There will be a marginal (but unpredictable) uptick in increased admissions into the FIU aggregate of STEM degrees; but, per #1, more of this FIU aggregate will actually conclude with a B.S. degree in-hand.

3. The degree does not directly enhance the quality of particular STEM courses. Indeed, a key point is that this degree will leave instructional modalities to specific-delivery units (Biology, Chemistry, and so on) with the robust integrity of such left intact. It is anticipated that the GPA's of the students electing this degree and its internal track will rise above the otherwise status-quo if they had remained in the traditional array of STEM (non-interdisciplinary) degrees, because the degree's intent, although providing an overall very strong STEM curriculum, also allows "self-tailoring towards excellence" (an internal "branding" phrase). The latter, although very much driven by market-place anticipated needs, also at once remedies the failure-to-complete-degree problem and, for the more "high-end" student, enhances unique, sophisticated, and innovative skill assets (e.g., the Biology/Pre-Med student who, discovering his/her forte, will bring aesthetic or engineering skills and talents to his/her subsequent advanced degree training or occupation; literally, the best heart-surgeons of the future may be those who understand the chemistry and design of carbon-based artificial heart valves and etc.).

4. The degree will increase the number of degrees awarded in STEM (an FIU and State strategic emphasis) and increase opportunities for partnerships in the community and with other FIU units (CNHS and CEC, especially)

E. If the program is to be included in a category within the Programs of Strategic Emphasis as described in the SUS Strategic Plan, please indicate the category and the justification for inclusion.

The Programs of Strategic Emphasis Categories:

1. Critical Workforce:
   - Education
   - Health
   - Gap Analysis
2. Economic Development:
   - Global Competitiveness
3. Science, Technology, Engineering, and Math (STEM)

Please see the Programs of Strategic Emphasis (PSE) methodology for additional explanations on program inclusion criteria at the resource page for new program proposal.

The proposed degree falls directly within the "Science, Technology, Engineering, and Math" (STEM) CIP category, and yet also has collateral impact in respect to "Critical Workforce: Health," as the degree-training will bring specific or ensemble STEM skills to a variety of "health" employment fields (e.g. a graduate who, although not working as a nurse or other direct health provider, may want to work in a hospital-setting, bringing his/her "math et al" analytics to such a setting (health-data analytics).

F. Identify any established or planned educational sites at which the program is expected to be offered and indicate whether it will be offered only at sites other than the main campus.

The degree is intended for students at the FIU main campus (MMC), where the bulk of the STEM labs for advanced courses are located. However, FIU also maintains "feeder" relations with several local community colleges as well as its own "I-75" campus; articulation with both, will allow students to populate previously earned pre-requisites at either into their MMC-based degree. FIU expects that the local community colleges will advise their students of the merits of the new degree; rather than transferring into Biology or Nursing or Engineering, a cohort of students will transfer into either the main degree or its "Medical Sciences" track. Additionally, students will be afforded additional flexibility by being able to take a subset of courses at the secondary BBC campus, via FIU Online, or at the Engineering Center.

INSTITUTIONAL AND STATE LEVEL ACCOUNTABILITY

II. Need and Demand

A. Need: Describe national, state, and/or local data that support the need for more people to be prepared in this program at this level. Reference national, state, and/or local plans or reports that support the need for this program and requests for the proposed program which have emanated from a perceived need by agencies or industries in your service area. Cite any specific need for research and service that the program would fulfill.

In the aggregate, the labor and employment market for the health, medical, and techno-engineering fields is very strong. The Bureau of Labor Statistics predicts continued growth in the health, medical, and engineering fields through to 2026 nationally. For example, Life, Physical and Social Science occupations is predicted to grow at 9.6% during this period; Healthcare practitioners and technical occupations growth is at 15.3%; 23.6% for Healthcare support occupations; and predicted growth architecture and Engineering at 7.5%; whereas Computer and Mathematical occupations reach 13.7%. These are the highest growth occupations provided by BLS. And since South Florida is a major urban hub, and a huge health services provider (and consumer), the previous statistics will be even higher in the greater Miami and South Florida. Baptist Health Systems is the second largest employer in South Florida, with other medical/health providers following (see South Florida Business Journal https://www.bizjournals.com/southflorida/subscriber-only/2018/07/20/largest-employers.html).

B. Demand: Describe data that support the assumption that students will enroll in the proposed program. Include descriptions of surveys or other communications with prospective students.

The new degree is based on the same structural paradigm of FIU's very successful re-modeling of its Liberal Studies B.A. degree into a Liberal Studies B.A. with tracks and an Interdisciplinary Studies B.A. without tracks; through the latter, over the last eight years, the original Liberal Studies degree expanded from approximately 800 students to 1800. The new STEM interdisciplinary degree will quickly populate from current FIU students switching from both traditional STEM programs and the in-flow from "Exploratory" majors. FIU anticipates, as well, in-flow from several

local community colleges. In respect to the "Exploratory" majors: each year FIU admits over 300 students into our "Exploratory STEM" (advising-system) track/majors. This allows them to explore a variety of STEM fields, before they select a more targeted STEM degree, without accruing excess credit hours. The Liberal Studies Program will, simultaneously to the rollout of the proposed degree, be assuming responsibility (rather than generic Undergraduate Studies) for guiding such students to either the proposed degree or alternative traditional degrees (Biology, Chemistry et al) once they are in our tracking-systems. In brief: the Liberal Studies Program's strong intent (supported by ongoing and sustained data-analysis of student degree/career demographics) is to transform "Exploratory" purgatory into viable paths-forward.

C. If substantially similar programs (generally at the four-digit CIP Code or 60 percent similar in core courses), either private or public exist in the state, identify the institution(s) and geographic location(s). Summarize the outcome(s) of communication with such programs with regard to the potential impact on their enrollment and opportunities for possible collaboration (instruction and research). In Appendix C, provide data that support the need for an additional program.

No other SUS programs use the 30.0101 CIP that are "substantially" kindred to FIU's proposed degree. UWF uses the latter CIP for a number of tracks. However, currently UWF maintains only a Zoo/Zoology training track. Other SUS schools (USF and New College) have "interdisciplinary" science degrees, but they are vastly different in design than FIU's proposed degree and cater to a very different student demographic. Please see the section above on the CAVD session. Communication with UWF confirms that there is not sufficient overlap to warrant impact or collaboration concerns.

D. Use Table 1 in Appendix A (1-A for undergraduate and 1-B for graduate) to categorize projected student headcount (HC) and Full Time Equivalents (FTE) according to primary sources. Generally undergraduate FTE will be calculated as 30 credit hours per year and graduate FTE will be calculated as 24 credit hours per year. Describe the rationale underlying enrollment projections. If students within the institution are expected to change majors to enroll in the proposed program at its inception, describe the shifts from disciplines that will likely occur.

Enrollment projections are based on a) immediate admits from FIU's affiliated community colleges (i.e., they will select this FIU degree rather than other South Florida alternatives, b) cohorts in-flowing from FIU's "Exploratory Majors" (i.e., they will select this degree, rather than FIU's other degree programs such as Biology or Chemistry), and C) students, already at FIU, who are in the "pre-med" category and will be taking the subordinate "Medical Sciences" track. The intent of the degree is to avoid "change majors to enroll...." scenarios; although some students in Biology or Chemistry et al may switch into the proposed degree, the expectation is that via the "Exploratory Majors" advisement and the broadcast messaging of the potential aptness of this degree according to student goals, "major-hopping" will be substantially reduced (see section "Introduction (A)" above).

Appendix A (1-A)
a) Community College admits=
b) FIU Exploratory Major in-flow=
c) FIU "pre-med" into "Medical Sciences" track=

E. Indicate what steps will be taken to achieve a diverse student body in this program. If the proposed program substantially duplicates a program at FAMU or FIU, provide, (in consultation with the affected university), an analysis of how the program might have an impact upon that university's ability to attract students of races different from that which is predominant on their campus in the subject program. <u>The university's Equal Opportunity Officer shall review this section of the proposal and then sign and date Appendix B to indicate that the analysis required by this subsection has been completed</u>.

As a Hispanic-serving institution, FIU has a student body that closely mirrors the diverse South Florida area. The proposed degree will assist those students, many of whom are first generation college students, graduate from college in a timely manner and be better prepared to enter the workforce in STEM fields. The data below show the demographics of students enrolled in the (housed under Liberal Studies) Liberal Studies B.A.. (Data source: https://accountability.fiu.edu accessed November 27, 2018). The new degree is anticipated to have kindred demographics to the current Liberal Studies B.A.. For the new degree, as with the current degrees housed under Liberal Studies, regular reach-out to local high schools and community colleges informing students of the degree's opportunities for them will occur, which will maintain if not increase the diversity demographics.

Category	Liberal Studies B.A. Fall 2018 Percents
American Indian or Alaskan Native	00.13%
Black or African America	17.61%
Hispanic/Latino	65.17%
Non Resident Alien	03.60%
Two or more races	03.47%
White	07.84%

III. Budget

A. Use Table 2 in Appendix A to display projected costs and associated funding sources for Year 1 and Year 5 of program operation. Use Table 3 in Appendix A to show how existing Education & General funds will be shifted to support the new program in Year 1. In narrative form, summarize the contents of both tables, identifying the source of both current and new resources to be devoted to the proposed program. (Data for Year 1 and Year 5 reflect snapshots in time rather than cumulative costs.)

No new allocations will be required to implement the proposed degree. All courses in the curriculum already exist, are regularly taught, and no additional sections will need to be taught, as the degree is not intended by-and-large to attract new students, but rather to give existing students clear yet varied pathways to desired careers or medical school/additional health-area training.

The re-allocation costs, as summarized in Appendix A, are redirects from the aggregate College of Arts, Sciences and Education current teaching-budget resources. Because the courses the students will be taking (with the exception of the Capstone, already routinely taught in sufficiency) are those in the aggregate FIU STEM inventory, the revenue-redirect will be, in effect, no different than when a Psychology Major takes an advanced Biology course as a non-major elective.

B. Please explain whether the university intends to operate the program through continuing education, seek approval for market tuition rate, or establish a differentiated graduate-level tuition. Provide a rationale for doing so and a timeline for seeking Board of Governors' approval, if appropriate. Please include the expected rate of tuition that the university plans to charge for this program and use this amount when calculating cost entries in Table 2.

Not applicable.

C. If other programs will be impacted by a reallocation of resources for the proposed program, identify the impacted programs and provide a justification for reallocating resources. Specifically address the potential negative impacts that implementation of the proposed program will have on related undergraduate programs (i.e., shift in faculty effort, reallocation of instructional resources, reduced enrollment rates, greater use of adjunct faculty and teaching assistants). Explain what steps will be taken to mitigate any such impacts. Also, discuss the potential positive impacts that the proposed program

might have on related undergraduate programs (i.e., increased undergraduate research opportunities, improved quality of instruction associated with cutting-edge research, improved labs and library resources).

Please see re-allocation points in section "B" above. No "potential negative impacts" are anticipated in the implementation of the proposed degree. Indeed, there will be "positive impacts" for FIU's Biology, Chemistry, et al units, because their own internal metrics (increased graduation rate and less excess hours towards graduation) will be improved as students less frequently "bail or fail" when these students are now housed, early in their undergraduate career, in the proposed degree as a rational, efficient, and more opportunity-inclusive alternative. It is difficult to give precision on; however, students in the new degree will also receive "increased undergraduate research opportunities," insofar as the degree's multi-discipline design, will allow for crossover research training (e.g. a student will take not just do Biology research, but potentially Biology, Chemistry, and Math/Data Analytic research).

D. Describe other potential impacts on related programs or departments (e.g., increased need for general education or common prerequisite courses, or increased need for required or elective courses outside of the proposed major).

No potential impacts in terms of increased systemic needs are anticipated. However, as a subset of students populating the new degree will be directed away from discipline-specific degrees (Biology, in particular) less suitable to their interests and career goals, such departments (again, Biology in particular) are likely to see an uptick in their internal GPA's and timely-graduation data.

E. Describe what steps have been taken to obtain information regarding resources (financial and in-kind) available outside the institution (businesses, industrial organizations, governmental entities, etc.). Describe the external resources that appear to be available to support the proposed program.

No specific non-FIU financials et al are anticipated or needed in order to implement the proposed degree.

IV. Projected Benefit of the Program to the University, Local Community, and State

Use information from Tables 1 and 2 in Appendix A, and the supporting narrative for "Need and Demand" to prepare a concise statement that describes the projected benefit to the university, local community, and the state if the program is implemented. The projected benefits can be both quantitative and qualitative in nature, but there needs to be a clear distinction made between the two in the narrative.

The previous section II highlights the national labor-statistics for high job growth in STEM field and health fields more specifically. As South Florida, the greater Broward-Dade region, and FIU itself are high-intensity medical and health locales (increasing demand for medical/health services), those national statistics amplify. The proposed degree anticipates robust in-flow from first-year admits, transfer students (from local community colleges), and late Freshman or early Sophomore switching from "Exploratory Major" status to either the "Medical Sciences" track or the umbrella degree. In the latter categories, per Appendix A Tables 1 and 2, specifically: a) " Medical Sciences" track first-year admits (xxxxx students), transfer students (yyyyy), and "Exploratory" (zzzz); and b), the umbrella degree first-year admits (aaaaaa), b) transfer students (bbbb), and Exploratory (cccccc). The majors who elect the proposed degree will populate necessary and growing job STEM and health areas, securing them high-caliber professional/health positions and providing, in turn, services that benefit the local community and state citizenry.

V. Access and Articulation – Bachelor's Degrees Only

A. If the total number of credit hours to earn a degree exceeds 120, provide a justification for an exception to the policy of a 120 maximum and submit a separate request to the Board of Governors for an exception along with notification of the program's approval. (See

criteria in Board of Governors Regulation 6C-8.014)

Not applicable.

B. **List program prerequisites and provide assurance that they are the same as the approved common prerequisites for other such degree programs within the SUS (see link to the Common Prerequisite Manual on the resource page for new program proposal). The courses in the Common Prerequisite Counseling Manual are intended to be those that are required of both native and transfer students prior to entrance to the major program, not simply lower-level courses that are required prior to graduation. The common prerequisites and substitute courses are mandatory for all institution programs listed, and must be approved by the Articulation Coordinating Committee (ACC). This requirement includes those programs designated as "limited access."**

If the proposed prerequisites are not listed in the Manual, provide a rationale for a request for exception to the policy of common prerequisites. NOTE: Typically, all lower-division courses required for admission into the major will be considered prerequisites. The curriculum can require lower-division courses that are not prerequisites for admission into the major, as long as those courses are built into the curriculum for the upper-level 60 credit hours. If there are already common prerequisites for other degree programs with the same proposed CIP, every effort must be made to utilize the previously approved prerequisites instead of recommending an additional "track" of prerequisites for that CIP. Additional tracks may not be approved by the ACC, thereby holding up the full approval of the degree program. Programs will not be entered into the State University System Inventory until any exceptions to the approved common prerequisites are approved by the ACC.

The umbrella degree requires no prerequisites. The prerequisites listed below for the Medical Sciences track match the Manual, section/track section #1 (out of the 16 tracks listed).

***Medical Sciences Track:* Prerequisites (31-33 credits):**

BSC 2010 and BSC 2010L (4 credits)
BSC 2011 and BSC 2011L or BOT 1010 and BOT 1010L (4 credits)
CHM 1045 and CHM 1045L (4 credits)
CHM 1046 and CHM 1046L (4 credits)
CHM 2210 and CHM 2210L or PHY 2048 and PHY 2048L or PHY 2053 and PHY 2048L (5 credits)
CHM 2211 and CHM 2211L or PHY 2049 and PHY 2049L or PHY 2054 and PHY 2049L (5 credits)
MAC 2311 or STA 3111 (3-4 credits)
MAC 2312 or STA 3112 or STA 3123 (3-4 credits)

C. **If the university intends to seek formal Limited Access status for the proposed program, provide a rationale that includes an analysis of diversity issues with respect to such a designation. Explain how the university will ensure that Florida College System transfer students are not disadvantaged by the Limited Access status. NOTE: The policy and criteria for Limited Access are identified in Board of Governors Regulation 6C-8.013. Submit the Limited Access Program Request form along with this document.**

Not applicable.

D. **If the proposed program is an AS-to-BS capstone, ensure that it adheres to the guidelines approved by the Articulation Coordinating Committee for such programs, as set forth in Rule 6A-10.024 (see link to the Statewide Articulation Manual on the resource page for new program proposal). List the prerequisites, if any, including the specific AS degrees which may transfer into the program.**

Not applicable.

INSTITUTIONAL READINESS

VI. Related Institutional Mission and Strength

A. **Describe how the goals of the proposed program relate to the institutional mission statement as contained in the SUS Strategic Plan and the University Strategic Plan (see link to the SUS Strategic Plan on the resource page for new program proposal= https://www.flbog.edu/pressroom/strategicplan.php).**

FIU's first-in-order mission priorities as listed in the "BeyondPossible2020 document" are a) "Improving the first-to-second-year retention rate of our first-time-in-college (FTIC) students from 76 to 90 percent," b) "Boosting our six-year graduation rate among FTIC students from 53 to 70 percent," and C) "Improving our four-year graduation rate of state college (AA) transfer students from 64 to 70 percent." The proposed degree, as reviewed previously, highly correlates with FIU's strategy to produce more STEM graduates, which is highlighted in various sections in the FIU University Strategic Plan. But the degree even more emphatically is intended to improve FIU's metrics in the latter a, b, and c, in respect to STEM retention and degree-efficiency.

B. **Describe how the proposed program specifically relates to existing institutional strengths, such as programs of emphasis, other academic programs, and/or institutes and centers.**

Given the inclusive nature of the degree, which draws on the resources and strengths of a number of FIU units, itemizing would be extensive, ranging across multiple College of Arts, Sciences and Education and other FIU colleges and units, institutes, and centers. However, the units, programs, and centers most directly related to the degree and which provide both foundational strength and advanced-level training include:

1. FIU's own expanding Medical School, which affiliates downward across-the-board in Chemistry, Biology, and kindred units.

2. Likewise, with FIU's expanding College of Nursing.

3. FIU's Humanities center is called "Center for the Humanities in an Urban Environment" (CHUE). This Center at once traditionally fosters humanities-qua-humanities, but also seeks innovatively to expand the two-way street between "humanities" and social sciences or science proper. It has soft alliances with the Liberal Studies program to track and encourage crossover thinking, community engagement, and career "out-of-the-box" trajectories. Although CHUE and "STEM" are, of course, very different, part of the intent of the proposed degree is to maximize 360-degree thinking and skill sets for what is increasingly becoming designated as the "4th Industrial Revolution," in which "techno"-thinking and skills alone will not be sufficient for real-actors/employees as either leaders or ground-level team players in the complex problems facing us in the 21st Century.

4. FIU has a number of "emerging pre-eminent" and "pre-eminent" emphases. The most relevant, in respect to the proposed degree, are listed below. Please note: each of the below are interdisciplinary, and thus hold high-relevance to the interdisciplinary design of the proposed degree:

a. STEM Transformation Institute (pre-eminent)
b. Brain, Behavior and the Environment Program (emerging pre-eminent)
c. Health Inequities and Disparities Program (emerging pre-eminent)
d. Translational Molecular Discoveries Program (emerging pre-eminent)

C. **Provide a narrative of the planning process leading up to submission of this proposal. Include a chronology in table format of the activities, listing both university personnel**

directly involved and external individuals who participated in planning. Provide a timetable of events necessary for the implementation of the proposed program.

Insert response here

Planning Process

Date	Participants	Planning Activity
xxxx		Initial conceptualization of need for.
xxxx		Pre-Proposal Ratification
xxxx		CAVD discussion.
11/06/18	Susan Himburg, Bruce Harvey, Maria Rosado, Grenville Draper, Maricel Cigales	Discussion and fine tuning of degree curriculum
	Bruce Harvey and Maricel Cigales	Feasibility Proposal review

Events Leading to Implementation

Date	Implementation Activity
11/28/18	Submit to the college curriculum review committee
	Review and approval by the University Undergraduate Council and Curriculum Committee
	Review approval by the Faculty Senate
	Review and approval by the FIU Board of Trustees
	Implementation Fall 2019

VII. Program Quality Indicators - Reviews and Accreditation

Identify program reviews, accreditation visits, or internal reviews for any university degree programs related to the proposed program, especially any within the same academic unit. List all recommendations and summarize the institution's progress in implementing the recommendations.

The Liberal Studies Program had its last total program review in 2012. At the time, the Liberal Studies Program was transitioning from its singular "B.A. Liberal Studies" degree to a revised "B.A. Liberal Studies" degree with tracks and a new B.A. Interdisciplinary Studies degree. "Recommendations" from the external reviewer, therefore, were anticipatory: a) would students be able to discern the differing benefits of the revised degree and the new one, and b) would FIU's advising systems be able to provide student guidance? Subsequent to the review, FIU has vastly expanded its professional-advisor system (LBS now has three dedicated advisors and three shared advisors from the College of Arts, Sciences and Education; versus a previous two dedicated and one shared); and, annual student survey data reflect overall high satisfaction with the advisors and the particular degree selected within the greater Liberal Studies Program.

VIII. Curriculum

A. Describe the specific expected student learning outcomes associated with the proposed program. If a bachelor's degree program, include a web link to the Academic Learning Compact or include the document itself as an appendix.

The proposed degree will use the student learning outcomes currently used for the Liberal Studies B.A. and Interdisciplinary B.A. The key "content" learning outcome in the latter two is captured by the Capstone course projects (geared to the students' "Expertise Focus"). The weblink for the Academic Learning Compact is: https://assessment.fiu.edu/academic-learning-compacts/index.html.

B. Describe the admission standards and graduation requirements for the program.

Admission standards are the same as those of the University. Graduation will require completion of the requisite

number of credits in the areas of Live and Health Sciences, Applied Sciences (not required for students in the Medical Sciences Track), Communication in STEM, Capstone/Professional Development and a Expertise Focus area. Students in the Medical Science track must complete the common prerequisites indicated below.

C. **Describe the curricular framework for the proposed program, including number of credit hours and composition of required core courses, restricted electives, unrestricted electives, thesis requirements, and dissertation requirements. Identify the total numbers of semester credit hours for the degree.**

BS in Natural and Applied Sciences

Prerequisites (0 credits)
Major Requirements (30 Credits):

Physical Sciences (6 credits):
Select from 3000/4000 level course with the following prefix: AST, CHM, CHS, ESC, GEO, GLY, MET, OCE, OCP, PHY, PHZ, PSC
Life and Health Sciences (6 credits):
Select from any 3000/4000 level course with the following prefix: BCH, BOT, BSC, ENY, EVR, HIM, HUN, MCB, NUR, OCB, OTH, PCB, PHC, SCE, ZOO, or IDS 3189, IDS 4232
Applied Sciences (6 credits):
Select from any 3000/4000 level course with the following prefix: BCN, BME, CAP, CCE, CDA, CEN, CGN, CGS, CIS, CNT, COP, COT, CTS, CWR, EEE, EEL, EGM, EGN, EGS, EIN, EMA, EMC, EML, ENV, GIS, IDC, MAC, MAD, MAE, MAP, MAS, MAP, MTG, STA or IDS 3214, IDS 4174
Communication in STEM (3 credits):
Select any 3000/4000 level with the following prefix: ENC, COM, SPC
Capstone/Professional Development (6 credits):
IDS 4890 (3 credits)
Internship or Research Experience or Professional Development Workshops (3 credits)
Expertise Focus (3 credits):
An additional 3 credits from any of the areas above

Medical Sciences Track:
Prerequisites (31-33 credits):
BSC 2010 and BSC 2010L (4 credits)
BSC 2011 and BSC 2011L or BOT 1010 and BOT 1010L (4 credits)
CHM 1045 and CHM 1045L (4 credits)
CHM 1046 and CHM 1046L (4 credits)
CHM 2210 and CHM 2210L or PHY 2048 and PHY 2048L or PHY 2053 and PHY 2048L (5 credits)
CHM 2211 and CHM 2211L or PHY 2049 and PHY 2049L or PHY 2054 and PHY 2049L (5 credits)
MAC 2311 or STA 3111 (3-4 credits)
MAC 2312 or STA 3112 or STA 3123 (3-4 credits)

Major Requirements (40 credits):
Physical Sciences (12-13 credits):
PHY 2048 and 2048L or PHY 2054 and 2048L or CHM 2210 and CHM 2210L (5 credits)
PHY 2049 and 2049L or PHY 2054 and PHY 2049L or CHM 2211 and CHM 2211L (4-5 credits)
BCH 3033 or CHM 4304 (3 credits)
Life and Health Sciences (9 credits):
PCB 3702 or PCB 3703 or PCB 4724 (3 credits)
PCB 3063 (3 credits)
PCB 4023 (3 credits)

Applied Sciences (0 credits): N/A
Communication in STEM (3 credits):
Select any 3000/4000 level with the following prefix: ENC, COM, SPC
Capstone/Professional Development (6 credits):

IDS 4890 (3 credits)

Internship or Research Experience or Professional Development Workshops (3 credits)

Expertise Focus (9 credits):

1) An additional 3 credits from any of the areas above
2) 6 credits in any 3000/4000 level course with the following prefix: PSY, SOP, DEP, CLP, EXP, PSB, SYG, SYO, SYA, SYP

D. Provide a sequenced course of study for all majors, concentrations, or areas of emphasis within the proposed program.

The "sequence course of study" will vary according to whether students are in the umbrella degree (which itself has multiple pathways of interdisciplinarity) or the "Medical Sciences" subordinate track. Variation will also occur according to whether students are first-year admits, transfers, or switching out of "Exploratory Major" status. That said, all students will complete the normative UCC Freshman/Sophomore requirements in their first two years of college courses (whether at FIU or as SUS/community college transfers). The Medical Sciences track, which has prerequisites, requires completion either in the first two years or in the semester or two after admit into the proposed degree. The umbrella degree and the Medical Sciences track otherwise require no strict linearity besides when an advanced-level 3000 course is needed for a 4000-level course. The curriculum in section "C" above indicates that such sequencing will be less required (3000 or 4000 level courses both count) than optional, according to individual student intent and goals.

E. Provide a one- or two-sentence description of each required or elective course.

The proposed degree draws upon virtually all of FIU's advanced-level STEM courses; in that sense, "each required" course would be the ensemble of all such STEM courses in the Undergraduate Catalogue. The dedicated, required Captstone IDS 4890 course is described in the Undergraduate Catalogue as follows: "*IDS 4890 Interdisciplinary Studies Capstone: Applying Knowledge (3). Preparation for course-of-study and guided academic/career self-assessment; senior year internship, service learning, or research project. Students complete a portfolio demonstrating applied expertise.*"

F. For degree programs in the science and technology disciplines, discuss how industry-driven competencies were identified and incorporated into the <u>curriculum and indicate whether any industry advisory council exists to provide input for curriculum development and student assessment.</u>

See the previous paragraphs pertaining to the crossover and inclusive, interdisciplinary design of the degree, which mix-and-matches student development among varied "industry-driven competencies." Please note:

The BurningGlass job-skill/employer site highlights that, for all STEM employers, communication skills and critical thinking are foregrounded. Both the umbrella degree and the subordinate track degree include a science writing requirement and a required "Professional Development" Capstone course (taken the first term of the senior year), the latter of which has built-in Modules/assignments that explicitly oblige students to research industry-specific skill-sets (i.e "competencies") according to their own "Expertise Focus" (6 credit hours, typically taken during the senior year). This, although seemingly a "soft" approach to competencies, has the strong virtue of engaging students actively, rather than passively, in terms of their own developing skill-set (put bluntly: if students do not do so in the Capstone course, they will not pass it). This is a robust, intentional part of the degree's overall conception, i.e., training students to be prepared for the evolving "4th Industrial Age Revolution," which increasingly will be tied less to "specific" skill-sets than an interdisciplinary blending within "knowledge economies." Fluidity, here, is a virtue not a liability.

Discipline-specific competencies (besides those addressed in the paragraphs above and below) are achieved via the array of discipline-specific courses students take (e.g, the sequence of courses they take in Biology, Chemistry, Math, and so on).

Additionally, the Liberal Studies Advisory Board (to be developed as the proposed degree is rolled-out) will be

comprised of (besides FIU participants) outside members from a variety of STEM and business fields, who will play an active role in counseling the degree Liberal Studies administrators in defining and assessing these fluid skill-sets.

G. **For all programs, list the specialized accreditation agencies and learned societies that would be concerned with the proposed program. Will the university seek accreditation for the program if it is available? If not, why? Provide a brief timeline for seeking accreditation, if appropriate.**

The proposed degree will not entail credentialing through "specialized accreditation agencies," because given its inclusive STEM design, no singular agency could functionally supply crossover STEM field accreditation rubrics.

H. **For doctoral programs, list the accreditation agencies and learned societies that would be concerned with corresponding bachelor's or master's programs associated with the proposed program. Are the programs accredited? If not, why?**

Not applicable.

I. **Briefly describe the anticipated delivery system for the proposed program (e.g., traditional delivery on main campus; traditional delivery at branch campuses or centers; or nontraditional delivery such as distance or distributed learning, self-paced instruction, or external degree programs). If the proposed delivery system will require specialized services or greater than normal financial support, include projected costs in Table 2 in Appendix A. Provide a narrative describing the feasibility of delivering the proposed program through collaboration with other universities, both public and private. Cite specific queries made of other institutions with respect to shared courses, distance/distributed learning technologies, and joint-use facilities for research or internships.**

The degree will be delivered on the main FIU campus (MMC), where the bulk of the STEM courses (and lab resources) are taught. Students will also be able to take an array of STEM courses at the Biscayne Bay Campus (BBC), but these will tend to be mid-level rather than more advanced or specialized STEM courses. The vast majority of students in the new degree will be identified as main-campus MMC students.

IX. Faculty Participation

A. **Use Table 4 in Appendix A to identify existing and anticipated full-time (not visiting or adjunct) faculty who will participate in the proposed program through Year 5. Include (a) faculty code associated with the source of funding for the position; (b) name; (c) highest degree held; (d) academic discipline or specialization; (e) contract status (tenure, tenure-earning, or multi-year annual [MYA]); (f) contract length in months; and (g) percent of annual effort that will be directed toward the proposed program (instruction, advising, supervising internships and practica, and supervising thesis or dissertation hours).**

The degree's aggregate professoriate includes all of FIU's STEM faculty. Note the examples below to convey the typical faculty-ensemble for different student-types electing the proposed degree:

Example A:

Example B:

B. **Use Table 2 in Appendix A to display the costs and associated funding resources for existing and anticipated full-time faculty (as identified in Table 4 in Appendix A). Costs for visiting and adjunct faculty should be included in the category of Other Personnel Services (OPS). Provide a narrative summarizing projected costs and funding sources.**

Instructional costs fall into: xxxxxx

C. **Provide in the appendices the abbreviated curriculum vitae (CV) for each existing faculty member (do not include information for visiting or adjunct faculty).**

The proposed degree draws upon faculty from virtually every STEM department within FIU's College of Arts, Sciences and Education. Please see the letter from the Dean of CASE, approving the credentials for this section en-total.

D. **Provide evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service. Such evidence may include trends over time for average course load, FTE productivity, student HC in major or service courses, degrees granted, external funding attracted, as well as qualitative indicators of excellence.**

The degree draws upon the aggregate productivity of FIU's current STEM academic units. To be noted: all FIU core STEM units have focused, over the last five years, in introducing student-success measures (more Math labs; innovative teaching paradigms in UCC Physics classes; and more research-opportunities for undergraduates).

X. Non-Faculty Resources

A. **Describe library resources currently available to implement and/or sustain the proposed program through Year 5. Provide the total number of volumes and serials available in this discipline and related fields. List major journals that are available to the university's students. Include a signed statement from the Library Director that this subsection and subsection B have been reviewed and approved.**

The existing Library resources are sufficient to support the BS in Natural and Applied Sciences. The general collections budget of the University Libraries for the 2017-2018 fiscal year was $7.55 million. The combined holdings of the FIU University Libraries consist of over 2 million books, including over 389,000 electronic books, and access to over 157,000 serial titles in print or online. Over 650 databases are available, including indexes, fulltext journal articles, videos, newspapers, and archival content. The library also holds substantial collections of federal, state, local, and international documents.

The Library maintains multiple demand-driven electronic book acquisitions which are fairly comprehensive in the sciences. Through these plans the library receives academic and professional-level titles in both the applied and natural sciences published in the U.S. and U.K.

Online Journal content can be accessed from the Library's Discovery Service or through e-journal portal, BrowZine. Although many of the online journals are available cover-to-cover, some titles may only have selective content available through aggregator databases. The library has cover-to-cover subscriptions to titles in the following electronic journal packages of importance to the proposed degree, the counts for which are included in the above totals: JSTOR, Academic Search Complete, Elsevier ScienceDirect, Springer, Wiley Online Library, Compendex, Applied Science & Technology Source, Sage, and Taylor & Francis.

In terms of journals most likely to be relevant to this program's offerings, the Library's Discovery Service reports the following subject area and journal counts:

- physical sciences 1,190,708
- applied sciences 1,205,809
- biological sciences 1,498,101
- chemistry 944,909
- heath sciences 685,567
- earth sciences 493,521
- astronomy 210,547

The library's collections of databases and other online resources, over 650 in number. Subscribed databases in the physical sciences and applied sciences include: Applied Science and Technology, General Science Collection, ProQuest SciTech Collection, MathSciNet, Science Citation Index, Science in Context, and World Library of Science. Among the thousands of online journals available to FIU, through the e-journal BrowZine, include:

Biology:
Springer's Nature and the various Nature Reviews series; Cell Press; Science (AAAS); Systematic Biology;
Chemistry:
Annual Review of Biochemistry; Chemical Reviews; Chemical Society Reviews; Accounts of Chemical Research; Nano Letters; Annual Review of Physical Chemistry; Nature Chemical Biology; Journal of the American Chemical Society (JACS); ACS Nano; Wiley Interdisciplinary Reviews: Computational Molecular Science; Chemical Science
Engineering:
Journal of Engineering Education; International Journal of Engineering Science;
Health Sciences:
New England Journal of Medicine; Annual Review of Medicine; JAMA; the British Medical Journal
Physics:
American Physical Society (APS) series; New Journal of Physics; Contemporary Physics; Physics Today

B. Describe additional library resources that are needed to implement and/or sustain the program through Year 5. Include projected costs of additional library resources in Table 2 in Appendix A. Please include the signature of the Library Director in Appendix B.

Not applicable.

C. Describe classroom, teaching laboratory, research laboratory, office, and other types of space that are necessary and currently available to implement the proposed program through Year 5.

All required or elective courses that students will be taking will use the already-in-place ensemble of classrooms, teaching laboratories, and et al at FIU, which are allocated through FIU's "Class Scheduling" systems. The dedicated Capstone course is an online course that has gone through several iterations and now has achieved full-maturity in design.

D. Describe additional classroom, teaching laboratory, research laboratory, office, and other space needed to implement and/or maintain the proposed program through Year 5. Include any projected Instruction and Research (I&R) costs of additional space in Table 2 in Appendix A. Do not include costs for new construction because that information should be provided in response to X (E) below.

Not applicable.

E. If a new capital expenditure for instructional or research space is required, indicate where

this item appears on the university's fixed capital outlay priority list. Table 2 in Appendix A includes only Instruction and Research (I&R) costs. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase as a result of the program, describe and estimate those expenses in narrative form below. It is expected that high enrollment programs in particular would necessitate increased costs in non-I&R activities.

Not applicable.

F. **Describe specialized equipment that is currently available to implement the proposed program through Year 5. Focus primarily on instructional and research requirements.**

Not applicable.

G. **Describe additional specialized equipment that will be needed to implement and/or sustain the proposed program through Year 5. Include projected costs of additional equipment in Table 2 in Appendix A.**

Not applicable.

H. **Describe any additional special categories of resources needed to implement the program through Year 5 (access to proprietary research facilities, specialized services, extended travel, etc.). Include projected costs of special resources in Table 2 in Appendix A.**

Not applicable.

I. **Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5. Include the projected costs in Table 2 in Appendix A.**

Not applicable.

J. **Describe currently available sites for internship and practicum experiences, if appropriate to the program. Describe plans to seek additional sites in Years 1 through 5.**

Because the degree seeks to propel students (depending on their goals) towards multiple and crossover job areas or advanced training, the "available" internship sites will be very extensive. Initially, the degree will draw upon the internship site inventory of an array of FIU affiliated units (Health, Biology, Chemistry, Environmental Sciences, and so on) as well as those centralized through FIU's College of Arts, Sciences and Education. As the degree progressively enrolls more students, a comprehensive data-base of internships will accrue both from alumni surveys and, more importantly, the required "Professional Development" Capstone course taken typically in the first semester of the Senior year: i.e. in the Capstone students report on internships or jobs they currently have, and such gets rolled-over in successive iterations of the course and adds to the data-base.

APPENDIX B-1

Please include the signature of the Equal Opportunity Officer.

Anne M Ostrano

11/30/2018

Signature of Equal Opportunity Officer **Date**

This appendix was created to facilitate the collection of signatures in support of the proposal. Signatures in this section illustrate that the Equal Opportunity Officer has reviewed section II.E of the proposal.

APPENDIX B-2

Please include the signature of the Library Director.

Anne M. Prestamo

Signature of Library Director

11/3/2018

Date

This appendix was created to facilitate the collection of signatures in support of the proposal. Signatures in this section illustrate that the Library Director has reviewed sections X.A and X.B.

Support letter/email from the Dean of FIU Nursing:

Support letter/email from the Dean of the College of Arts, Sciences and Education (to authorize the inclusive professoriate/courses from CASE STEM units):

Support letter/email from the Chair of Biology: