



NOTRE DAME
OF MARYLAND
UNIVERSITY

March 1st, 2021

James D. Fielder, Jr., Ph.D.
Secretary of Higher Education
Maryland Higher Education Commission
6 North Liberty Street
Baltimore, MD 21201

Dear Secretary Fielder:

Enclosed please find our proposal to offer a Post Baccalaureate Certificate in Actuarial Science. Pursuant to COMAR 13.8.02.03.030 (1) & 138.02.03.06, the PBC will be an 18-credit hour fully online, stackable credential that is non-residence based and aimed at the working professional. Establishing the PBC program, as guided by the certification requirements of the Society of Actuaries (SOA), further exemplifies the University mission, vision, and goals and creates interdisciplinary competencies for students who wish to pursue curriculum to prepare for the Introductory Financial Mathematics and Probability exams and will satisfy the SOA Validation by Educational Experience (VEE) requirements.

This degree program addresses the Maryland State Plan for Postsecondary Education, 2017-2021. The program uses a holistic admissions process to select a talented and diverse student body thereby supporting the State's minority student achievement goals. Accessibility and affordability of education will be maintained, as the University does not charge out of state tuition. The Maryland Higher Education Commission State Plan: *Increasing Student Success with Less Debt 2017-2021* goals and strategies call for Access, Success and Innovation. The proposed program allows students access to an opportunity to enroll in and earn a professional certificate that will support their advancement in the workforce meeting the critical need across Maryland. The proposed program will provide a high-quality affordable degree program that fosters innovation and includes support services to ensure student success. The curriculum and support services are designed to facilitate on-time degree completion, include career planning and advising, and provide innovative pedagogies that serve the needs of both traditional and non-traditional students.

Institution: Notre Dame of Maryland University Actuarial
Program: Science
Degree: **Post Baccalaureate Certificate (PBC)**
Contact person: Suzan Harkness, Associate Vice President for Academic Affairs and Assessment
410-532-5316, sharkness@ndm.edu

If you have any questions about this new program, please do not hesitate to call. Thank you in advance for consideration of this proposal. Please find a check in the amount of \$850 .00 enclosed.

Sincerely,

A handwritten signature in blue ink that reads "Sr. Sharon Slear".

Sr. Sharon Slear, Ph.D.
Provost and Vice President for Academic Affairs



Cover Sheet for In-State Institutions

New Program or Substantial Modification to Existing Program

Institution Submitting Proposal Notre Dame of Maryland University

*Each **action** below requires a separate proposal and cover sheet.*

- | | |
|--|--|
| <input type="radio"/> New Academic Program
<input type="radio"/> New Area of Concentration
<input type="radio"/> New Degree Level Approval
<input checked="" type="radio"/> New Stand-Alone Certificate
<input type="radio"/> Off Campus Program | <input type="radio"/> Substantial Change to a Degree Program
<input type="radio"/> Substantial Change to an Area of Concentration
<input type="radio"/> Substantial Change to a Certificate Program
<input type="radio"/> Cooperative Degree Program
<input type="radio"/> Offer Program at Regional Higher Education Center |
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Payment Yes Payment OR*STARS Date Submitted: **3/9/2021**
 Submitted: No Type: Check \$**850,00**

Department Proposing Program	School of Arts, Sciences and Business
Degree Level and Degree Type	Post Baccalaureate Certificate (PBC)
Title of Proposed Program	Actuarial Science
Total Number of Credits	18
Suggested Codes	HEGIS: 504.00 CIP: 521304.0000
Program Modality	<input type="radio"/> On-campus <input checked="" type="checkbox"/> Distance Education (<i>fully online</i>)
Program Resources	<input checked="" type="checkbox"/> Using Existing Resources <input type="radio"/> Requiring New Resources
Projected Implementation Date	<input checked="" type="checkbox"/> Fall <input type="radio"/> Spring <input type="radio"/> Summer Year: 2021
Provide Link to Most Recent Academic Catalog	URL: http://catalog.ndm.edu/undergraduate-catalog

Preferred Contact for this Proposal	Name: Suzan Harkness
	Title: Associate Vice President of Academic Affairs
	Phone: (410)532-5316
	Email: sharkness@ndm.edu

President/Chief Executive	Type Name: Marylou Yam, Ph.D. 3/9/21
	Signature: Date: 3/9/21
	Date of Approval/Endorsement by Governing Board: N/A

Revised: 312019

NOTRE DAME OF MARYLAND UNIVERSITY
Baltimore, Maryland
Academic Program Proposal Submitted to the Maryland Higher Education
Commission
Post Baccalaureate Certificate (PBC), Actuarial Science

Pursuant to COMAR 13.8.02.03.030(1) & 138.02.03.06, Notre Dame Maryland University ("NDMU" or "the University") is pleased to submit a proposal for a new Post Baccalaureate Certificate (PBC) in Actuarial Science. Guided by the certification requirements of the Society of Actuaries (SOA), University faculty (members of the Mathematics, and Business and Economics departments) have collaborated to design an 18-credit hour fully online, stackable credential that is a non-residence-based course of study. The curriculum will prepare students for the Introductory Financial Mathematics and Probability exams and will satisfy the SOA's Validation by Educational Experience (VEE) requirements.

The following academic proposal describes the market need, the design, the curriculum, the student learning outcomes, the evaluation plans to ensure quality, and the resources needed to launch the PBC Program. The budget indicates the strong likelihood of success in meeting the students' learning goals and the effectiveness of the program.

A. Centrality to Institutional Mission and Planning Priorities

Notre Dame of Maryland University's heritage has been sustained since 1895 by providing timely and timeless higher education opportunities for women and men who want to transform the world. Today, the Notre Dame Mission challenges its students to live these values:

- strive for intellectual and professional excellence,
 - build inclusive communities,
 - engage in service to others, and
 - promote social responsibility
- (<http://www.ndm.edu/about-us/mission-social-responsibility>).

While undergraduate full-time women's education remains a core priority for the University, today adult women and men are admitted to full-time and part-time graduate degrees and post bachelor's certificates. The University continues to meet the particular educational and contemporary professional needs of students via this most recent effort to expand options for workforce development through a PBC in actuarial science. To better meet the needs of today's adult students, courses in the program will be offered fully online.

In keeping with its Mission, Notre Dame emphasizes transformative education for women and men that addresses competencies needed for today's workplace and professional development that integrates those competencies. These competencies are tested in a rigorous liberal arts and sciences educational environment. Guided by the certification requirements of the Society of Actuaries (SOA), the University faculty (members of the Mathematics, and Business and Economics departments) has collaborated to design an 18-credit course of study. The curriculum will prepare students for the Introductory Financial Mathematics and Probability exams and will satisfy the SOA Validation by Educational Experience (VEE) requirements. Such students will be able to qualify to become Associates of the Society of Actuaries (ASA) and will be employable in entry-level actuarial positions.

At its founding, Notre Dame initiated programs and hired faculty for the natural sciences and mathematics curriculum, a controversial plan for higher education for women at that time. Currently, STEM education remains a strength of NDMU, evidenced in strong programs of study in mathematics, pre-engineering and physics, as well as chemistry and biology. Such quantitative competences are also stressed in the study of finance, accounting, statistics and economics courses in NDMU's accredited major in business (via the Accreditation Council for Business and Schools-ACBSP). The actuarial science degree will be closely aligned with and draw on the same curricular strengths as those cultivated through the institution's master's degrees in Data Analytics and Risk Management.

The current strategic plan for the University stresses development of "innovative degree programs, interdisciplinary centers of excellence, and distinctive leadership and experiential learning opportunities for students." Further examples of this commitment to the anticipated actuarial science program are the successful accreditation of the University's business programs and the new capital campaign, which includes renovation of the Knott Science Center where the Mathematics department is housed. The campaign also includes updating technologies that will support the Mathematics department.

As a liberal arts and sciences institution, Notre Dame assumes a serious responsibility to provide intentional career pathways for students. Actuarial science will provide a clear career foundation of study for students interested in applied mathematics and finance/accounting in particular. This program is designed for adult students who are looking to expand their career opportunities. The program will deliver curriculum fully online. This will increase access to those students who require greater flexibility in degree and course offerings and who would like to enhance their qualifications by stacking certificates within or upon existing degrees. This certificate can also be preparatory to beginning a master's degree in areas such as Risk Management, Analytics, and Actuarial Science.

The University is well-positioned to initiate this certificate from the standpoints of student interest, workforce needs, facilities, strengths of the teaching faculty, the rigor of the curriculum, and academic support services. The University's Strategic Plan includes initiatives to evaluate and respond to market demand by developing innovative programs where the workforce need is great. Moreover, the university mission statement identifies as a core value the goal to "foster intellectual and professional excellence."

While Section L of this proposal provides details related to the program budget, the costs to initiate this curriculum are modest. Only two new 500-level courses must be developed (Mathematical Statistics and Financial Mathematics), and the existing courses have already been developed for on-line delivery. Responsibility for design and delivery of the major curriculum rests with the full-time faculty who will teach the program courses. Faculty who will be teaching the courses are certified through Quality Matters for on-line course delivery. The faculty member who will be designing the new courses has also been certified for on-line course development. The University anticipates not more than one course a term within the program would be offered by adjunct faculty. The program budget will be adjusted to include a full-time faculty appointment should growth require such action.

Library holdings and facilities for teaching and uses of technology are already in place given the curriculum of collaborating departments but will be enhanced incrementally to address new needs and innovations. Costs for marketing the major will be included in the enrollment management budget attached to the Women's College.

The Business Department pedagogy incorporates University-supported software for accounting, finance and economics courses. The University will assure that all technology for instruction is reliable, refreshed and provides robust support for learning. In addition to a full-time technology specialist whose assignment is to support faculty in course development consistent with the Learning Management system, students will be assisted by the 24-7-365 Help Desk staff and course-embedded, online tutors.

Through supportive and directive personal academic advising by the School of Arts, Sciences, and Business full-time, professional advisor, Notre Dame will monitor the academic progress of each student in the certificate program. The professional advisor provides individualized plans to each student based on the number of courses they would like to take each semester so that they remain on track based on their goals.

All but two of the courses are already embedded in other areas of the curriculum and all courses are scheduled on a regular basis to assure access, students will not be “stranded.”

B. Critical and Compelling Regional or State-wide Need as Identified in the State Plan

This proposed program is consistent with the goals of the *2017-2021 Maryland Plan for Postsecondary Education*, particularly Strategy 8 which addresses workforce development and readiness.

The field of risk analysis is growing at a substantial rate nationally and in Maryland, and the associated skills are being utilized in a growing number of sectors outside of traditional actuarial related position. Today's modern workforce requires more technical competencies to increase financial literacy as well as capacities to analyze big data and risk. Building off of NDMU's graduate level programs in Data Analytics and Risk Management, Notre Dame believes it is prudent to embed such competencies in opportunities for adult students. Students completing NDMU's proposed actuarial science certificate will be ideally suited to advance the state of knowledge and the workforce in risk analysis. The U.S. Bureau of Labor Statistics projects that between 2018-2028 there will be a 20% change in employment for actuaries.

The goals and strategies of the Maryland State Plan for Postsecondary Education: *Increasing Student Success with Less Debt 2017-2021* call for Access, Success and Innovation. Particularly, the State Plan calls for institutions to "Promote and implement practices and policies that will ensure student success" and "Foster innovation in all aspects of Maryland higher education to improve access and student success." NDMU's proposed MSPA addresses the following strategies:

- Strategy 7: Enhance career advising and planning services and integrate them explicitly into academic advising and planning.
- Strategy 8: Foster innovation in all aspects of Maryland higher education to improve access and studentsuccess.
- Strategy 11: Encourage a culture of risk-taking and experimentation.

NDMU's proposed PBC in Actuarial Science certificate provides students access to an innovative opportunity to enroll in courses that help prepare them for SOA's exams P and FM and that will support their advancement in a variety of industries. It will allow traditional and non-traditional students access to ongoing and lifetime professional development opportunities. Through a stackable professional degree, NDMU will prepare students to meet the growing need in Maryland and the country for actuaries.

C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State

While no particular major is required to qualify to take the examinations to become an associate of the Society of Actuaries, graduates of NDMU's actuarial science certificate program will have completed requirements related to business, economics, and statistics, that will not only prepare them for certification exams but also for securing sought after entry-level positions.

According to Bureau of Labor Statistics (BLS) under the U.S. Department of Labor (DOL), in 2018, the largest employers of actuaries were as follows:

• Finance and Insurance	71%
• Professional, Scientific, and Technical Services	15%
• Management of Companies and Enterprises	6%
• Government	4%
• Self-Employed Workers	1%

While casualty insurers are the principal employers of actuaries (50%), according to data published by the Casualty Actuarial Society in 2018, government, financial advisors, banking and health care agencies also hire actuaries. The skills of actuaries are needed across all aspects of risk assessment in business and various government sectors.

According to data provided by the Society of Actuaries and the Casualty Actuary Society, the largest numbers of actuaries are employed in the Northeast and the South (CAS number for 2013 is 50 percent of practicing actuaries; SOA number is 39 percent.) This data reflects the high number of finance, insurance and government entities operating in this geographic area of the United States and employing actuaries. Members of the Academy of American Actuaries number more than 19,500 and generally work in the area of public policy/government and actuarial oversight.

BLS projects an increase of actuarial jobs (SOC: 15-2011) from 25,000 in 2018 to 30,000 in 2028, an increase of 5,000 (20%) jobs nationally, much faster than the average for all occupations. Combined with 22,000 estimated occupational separations over ten years (2,200 annually), BLS projects 105,600 openings over ten years, or 10,560 annual openings. BLS estimates that the 2019 median pay for actuaries is \$108,350.

As reported by BLS, the Maryland-DC-Northern Virginia region is ranked number 10 nationally in metropolitan employment of actuaries. The adjacent metropolitan area of greater Philadelphia -Camden-Wilmington-

Northeast Maryland is ranked third. The combined number of positions in those areas is 1,460, according to data from 2018.

The location quotient is the ratio of the area concentration of occupational employment to the national average concentration. A location quotient greater than one indicates the occupation has a higher share of employment than average, and a location quotient less than one indicates the occupation is less prevalent in the area than average. The location quotient for actuaries in the State of Maryland is healthy at 1.23.

In Maryland, the Maryland Department of Labor (MDOL) projects an increase in actuarial jobs (SOC 15-2011- Actuaries; and SOC 13-2053 - Insurance Underwriters) from 2,543 in 2016 to 2,698 in 2026, an increase of 155 jobs (6%). Combined with 1,962 estimated occupational separations over ten years (196 annually), MDOL projects 2,117 openings over ten years, or 212 annual openings.

According to the Maryland Higher Education Commission's (MHEC) Academic Program Inventory and Trends in Degrees by Program Report 2019, Maryland currently has three colleges or universities approved to offer actuary related programs. In 2019, degree production was at 55 degrees annually (3-YR rolling average of graduates). Compared to MDOL data, this leads to the conclusion of an average annual shortfall of 157 graduates.

In addition to the 5,000 new positions projected by 2028 by BLS, DataUSA reports that, in 2018, 13.5 to 15.2 percent of female actuaries were between the ages of 50 and 55. The number of men in the field has historically skewed younger. By 2028, BLS projects the percentage of the overall labor force 55 and older will increase to 25.2% from 23.1% in 2018. The impact of the aging workforce will be felt in the actuary field, and one can reasonably conclude that such openings by attrition/retirement will become an increasingly significant factor in recruitment for the field.

The curriculum to be followed is consistent with the guidelines of the professional actuarial associations referenced in this document. The courses specified are those recommended for readiness for the Financial Management and Probability exams as well as Validation by Educational Experience (VEE). These will be consistent with qualifying for entry-level employment as an associate of the Society of Actuaries Professional or for competitive advantage in the job market. It is customary for credentialing through the two examinations to be completed at the time of the awarding of the certificate.

Marketing and recruitment for this certificate has not yet begun. However, the University conservatively anticipates an enrollment of 4-5 in the first semester the certificate is offered. By year four, the University anticipates that the enrollment in each course will be between 12-15. Stackable degrees provide students shorter paths to advancing their career

opportunities. They have the capacity to transform a pathway to employability or career promotion. The stackable certificate appeals to students who want to work full-time while earning credentials.

D. Reasonableness of Program Duplication

There are no schools within the state of Maryland who are currently offering a PBC in Actuarial Science that is taught fully on-line and geared to adult learners. Morgan State University offers a baccalaureate degree in actuarial science, as well as a mathematics major with a concentration in actuarial science. Towson University offers a concentration in actuarial science and risk management within the mathematics major. McDaniel College recently received approval for a major in actuarial science.

E. Relevance to High-demand Programs at Historically Black Institutions (HBIs)

No HBIs in Maryland offer a PBC in Actuarial Science. Notre Dame will be seeking adult students who are interested in taking on-line classes outside of a full degree.

F. Relevance to the Identity of Historically Black Institutions (HBIs)

NDMU does not believe this program will impact the unique mission and identities of HBIs as it does not duplicate a similar program at an HBI.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes (as outlined in COMAR 138.02.03.10)

Interest in STEM-related and business degrees has increased in recent semesters at NDMU at the undergraduate and graduate levels, and STEM education has remained a strength at the university. The provost, and the prior and current deans of the School of Arts, Sciences and Business encouraged the faculty of the Mathematics, Computer Sciences, and Business and Economics departments to consider leveraging these curricular strengths into applied mathematical studies with a clearer focus. This has resulted in the creation of a PBC and Masters in Risk Management, a Master in Analytics, and this proposal for a PBC in Actuarial Science. All faculty to be assigned to the program are experienced professors who have taught on both graduate and undergraduate levels.

Principal Educational Objective

To cultivate the quantitative and analytical competencies required for successfully completing initial certification by the SOA.

Learning Outcomes

Students will:

- acquire and demonstrate the explicit problem-solving skills required for the SOA Probability Exam

- acquire and demonstrate the explicit problem-solving skills required for the SOA Financial Mathematics exam
- demonstrate operational and analytical understanding of finance/ financial literacy, operation of insurances, economic theory, and the functioning of insurance and financial markets in private and government sectors
- model real-world problems mathematically, interpret results properly and make recommendations for resolution based on best practices
- develop communication skills to explain analytical results to clients and constituencies.

Student learning outcomes for all courses will be assessed against specific desired competencies. Competencies will be assessed via mathematical problem solving, case studies and simulations. The aggregate data will be used by the faculty to assist students and improve curriculum and pedagogy. Students also complete evaluations for every course, and the faculty will also review and respond to this feedback.

All assessment data is reviewed within the departments for required action and presented to the School of Arts, Sciences, and Business Assessment Committee. Results of assessments and reports of needs are then forwarded to the dean and the University Assessment Committee for additional action including augmentation or reallocation of resources.

Clearly, one external assessment of importance will be to review the results of the certification exams and to track how many students qualify as associates of the Society of Actuaries at the time of first full-time employment. More informally, initial career positions will be monitored.

Proposed Curriculum

Catalog Number	Title	Credits
MAT-311	Theory of Probability*	3
MAT-5XX	Mathematical Statistics	3
MAT-5XX	Financial Mathematics	3
RIS-601	Uncertainty	3
RIS-602	Quantitative Risk Assessment	3
BUS-530	Financial Analysis	3
	Total Credits	18

*Students who have already completed a Probability course prior to entry into the program will take RIS-605 Decision Making Under Uncertainty rather than MAT-311

Course Descriptions

MAT-311 Theory of Probability*

Analyzes combinatorial methods; probability and sample spaces; random variables and their distributions {discrete and continuous}; moment generating functions; and the relation between probability and statistics. Probability exposes students to the diverse possible applications in such fields as mathematics, science, engineering, psychology, social sciences and management science. Prerequisite: MAT-212 Calculus II. (3 credits)

MAT-5XX Mathematical Statistics

Explores the topics and techniques covered in Basic Statistics from a theoretical viewpoint, including sampling distributions, point estimation, hypothesis testing, modeling, confidence intervals, correlation and analysis of variance, and regression analysis. Prerequisite: MAT-215 Basic Statistics. (3credits)

MAT-5XX Financial Mathematics

Explores the fundamental concepts of financial mathematics. Topics include: present value, annuities, loan repayment, valuation of bonds, general cash flows and portfolios, immunizations, interest rate swaps, and determinants of interest rates. This course is intended to prepares students for the Society of Actuaries FM exam. Prerequisites: ECO-211 Macroeconomics and ECO-212 Microeconomics. (3 credits)

RIS-601 Uncertainty

Surveys epistemic and aleatory uncertainty. Explores the use of probability distributions to address these sources of uncertainty. Explores the use of probability to represent uncertainty using probability distributions. (3 credits)

RIS-602 Quantitative Risk Assessment

Introduces deterministic and probabilistic risk assessment. Students learn to build and use probabilistic risk assessment models. Emphasis is placed on communicating uncertainty to decision makers. (3 credits)

BUS-530 Financial Analysis

Emphasizes the foundation areas of finance to assist learners in practical business decision making. Introduces financial management concepts including time value of money, net present value and alternative measures, financial ratio analysis, capital budgeting, cost of capital, and asset valuation. Prerequisite: BUS-537 Aspects of Financial Reporting or waiver of BUS-537 based on business experience and previous course studies. (3 credits)

**If a student has already taken MAT-311 Theory of Probability they will take instead:*

RIS-605 Decision Making Under Uncertainty

Prepares students to make decisions under conditions of uncertainty. This course provides a background in the most current principles, methods and techniques of decision analysis for making decisions under uncertainty. It also offers a very practical approach for risk managers and others who must make critical decisions when uncertain. (3 credits).

For this program, the *awarding of the certificate* is not contingent on earning a specific certification. However, to gain an entry-level position as an associate of the Society of Actuaries the student will need to pass two certification exams in Financial Mathematics and Probability after completing the designated NDMU curriculum. The students will satisfy the Validation by Educational Experience (VEE) requirements by successfully completing the required courses.

Should the certificate program be approved, the University website will immediately add program requirements and curriculum information. The enrollment management counselors will be provided with training as to how to best discuss this major with students and their families.

Every student receives a degree requirement check sheet at the time of registration. Under the supervision of the dean, the professional academic advisor for the School of Arts, Sciences, and Business maps a program of study with each student, not only for the semester at hand but also projections to degree completion. Students may track their respective degree progression.

One concern that must be addressed through academic advising early on is the certification process for actuaries and the long career path (six years or more) required to complete all the examinations to be fully qualified credentialed.

All students are provided with mandatory training on uses of the computer laboratories and the learning management system. Help desk assistants are available 24-7-365 for any issues related to the Learning Management System. Furthermore, we provide free, 24-7-365 online tutoring through SmarThinking for all students.

One-on-one financial counseling is provided by the Financial Aid Office by appointment. The program of financial literacy initiated in academic year 2019-2020 will be available to these students to support their learning and confidence in navigation of their financial affairs. The admissions team, the faculty, the department chair, and the dean generate suggestions as to content of promotional materials. Accuracy of information on services and academic requirements is scrutinized.

Prior to final production, marketing and promotional materials for all media forms are again reviewed by the enrollment management staff, the University marketing specialist, the registrar, the department chair and the school dean. Such messaging is prepared during the time the Higher Education Commission is reviewing the program proposal. The Provost authorizes the public release of program information when Commission approval of the program is received.

H. Adequacy of Articulation

There are no articulation or partnership agreements in place for this program.

I. Adequacy of Faculty Resources (as outlined in COMAR 13B.02.03.11).

Three full -time faculty will be responsible for developing and delivering courses in the program. The curriculum will be planned collaboratively across academic departments. Faculty teaching in the program have terminal degrees in the field of expertise. Additionally, participating faculty have professional experience in the corporate business and finance sectors, as well as certification as an on-line instructor and course developer.

Name	Terminal Degree	Academic Appointment	Status	Courses to be Assigned
Charlie Yoe	Ph.D Agricultural & Resource Economics	Professor of Economics and Risk Management	Full- Time	RIS-601 Uncertainty RIS-602 Quantitative Risk Assessment RIS-605 Decision Making Under Uncertainty
Larry Beyer	MBA	Assistant Professor of Business	Full- Time	BUS-530 Financial Analysis
Kristyanna Erickson	Ed. D in Mathematics	Associate Professor of Mathematics	Full- Time	MAT-311 Theory of Probability MAT-5XX Mathematical Statistics
Charles Buehrle	Ph.D. in Mathematics	Associate Professor of Mathematics	Full- Time	MAT 5XX Financial Mathematics

Under the new NDMU Strategic Plan, faculty are implementing new strategies for experiential and collaborative learning. The Office of the Provost provides in-servicetraining in such approaches at a Faculty Institute held at the beginning of each semester. The Faculty Institutes have also focused on meeting the needs of Notre Dame's increasingly diverse undergraduate population, both Women's College and Adult Undergraduate Students (CAUS).

Within the faculty for the proposed major are two members who are specialists in mathematics pedagogy and team-based teaching. They will be the leaders in

design of the curriculum to support actuarial science students.

The University implemented a new LMS for academic year 2020-2021, Brightspace. Brightspace offers integrated tools that will enhance course delivery for full on-line courses, as well as traditional face-to-face classes. The University has contracted with Brightspace to offer faculty and students 24-7-365 Help Desk services.

The University provides online tools and face-to-face LMS training for faculty under the direction of a professional staff member who serves as an expert resource for them, as well as a part-time instructional designer. For online courses, the faculty member of record is required to complete the Quality Matters course *Teaching Online*. Faculty who are already credentialed by QM as peer reviewers are exempt from this course as are those who have received comparable training at other institutions. Faculty may not teach online courses until completing the QM training course. Faculty who are designated course developers must complete either the QM *Developing Your Online Course* or *Improving Your Online Course* or a comparable course with Wiley, *Developing Online Courses*.

There are no current plans to offer this curriculum through synchronous distance learning.

J. Adequacy of Library Resources (as outlined in COMAR13B.02.03.12)

Within their joint library, Notre Dame of Maryland University and Loyola University Maryland have sufficient resources as reviewed by their respective accrediting bodies for business (ACBSP and AACSB). Both institutions sponsor undergraduate and graduate degrees in business-related areas. As noted in the curriculum review section of this proposal, there are only two completely new courses to be included in the NDMU requirements. The collection of databases, online resources, journals and books is comprehensive and covers the areas of finance, accounting, statistics and probability.

Since its opening in 1973, the Loyola/Notre Dame Library has served as a critical resource for outstanding teaching and scholarship. Notre Dame and Loyola have recently completed a joint renovation and expansion project. The results of this project are expanded use of technology for teaching and learning; accommodation of greater numbers of students, faculty and community patrons; and vibrant, vital center for scholarly exploration and achievement.

The Loyola/Notre Dame Library is open 7 days a week during the fall, spring, and summer semesters. The Loyola Notre Dame Library provides information services and resources to support the academic programs and educational concerns of Notre Dame of Maryland University and Loyola University Maryland. Through the Library's website, faculty, students and staff may access an extensive array of books, journals, databases, and streaming

video to support research, teaching, and learning.

The library's collection consists of 455,000 volumes, 1,421 print and 22,126 electronic periodical subscriptions, and 39,000 media items. The library's web site is the gateway to a wealth of information, including over 120 online databases, which provide access to over 300,000 journals, magazines, and newspapers in print and electronic formats. The Loyola Notre Library's Online Journal holdings are substantial, including 143 peer reviewed Journal titles.

Additionally, the Library provides access to collections at other partner libraries:

- The University System of Maryland and Affiliated Institutions consortium provides access to over 9 million items at 17 member libraries.
- The Eastern Academic Libraries Trust (EAST), a print archive that guarantees access to 6 million volumes via Interlibrary Loan.

Assistance Provided

- Students, faculty and staff may request help in-person, via email, instant messaging, and telephone.
- Online chat reference is available 24 hours a day, seven days a week.
- Information about copyright is available through a resource guide, workshops and individual consultations provided by a librarian in the Copyright Information Center.

Other Library Resources

- 693 individual seats are available for studying in addition to the
 - o Two computer instructional labs: Lab A has 20 seats; Lab B has 30 seats
 - o The Collaboratory at the Library, an active learning space that accommodates up to 22 students in a flexible environment
 - o 100 seat auditorium
 - o a 24 seat screening room cyber cafe and a multi-functional gallery used for events and flexible study space group study areas
 - o seminar rooms
 - o 91 computers with Microsoft Office and access to the Internet
 - o Adaptive technology mainstreamed throughout the Library to provide access for disabled users
 - o Makerspace, a technology -rich environment that fosters creation, innovation, and collaborative learning.

Databases that the library currently provides to support this major include:

A key word search of Actuarial Science in the Loyola/Notre Dame Library for peer reviewed articles, book and journals (2010-2020) produces 24,957 search results, whereby 21,346 are journal articles; 1,552 are magazine articles; 918 are conference materials; and 501 are books.

A modest amount of funding in alternate years will be provided to update the collection with some additional resources for actuarial

science as needed.

K. Adequacy of Physical Facilities, Infrastructure, and Instructional Equipment (as outlined in COMAR 13B.02.03.12)

The institution has a sufficient infrastructure for equipment and facilities for this major. Complementary needs for instruction in computer science, mathematics, accounting, economics and finance must continue to be met. Resources in computer hardware and software will be refreshed and enhanced over time in alignment with the technology strategic plan and the renovation of Knott Science Center.

NDMU has technology, support, and expertise to offer courses across a variety of modalities including face-to-face, hybrid, and on-line. There is a staffed Faculty Resource Center and instructional course design support. In addition, NDMU has a state-of-the art global classroom that supports superior web conferencing, internet collaboration across institutions, mobile screen sharing, HD resolution video collaboration, and the ability to build collaboration-enabled Zoom conference rooms. NDMU supports a new Learning Management System (Brightspace) where faculty may deposit course materials, facilitate technology enhanced or on-line instruction, quizzes and exams, host chat and discussion board collaboration, and engage with students outside of the classroom to enrich the learning experience.

The entire campus hosts a wireless community to support mobile and web-based collaboration and communication. NDMU also supports learners with a well-staffed and supportive technology helpdesk.

L. Adequacy of Financial Resources with Documentation (as outlined in COMAR 13B.02.03.14)

Table 1: Program Resources					
Revenue Categories	Year 1 2021-2022	Year 2 2022-2023	Year 3 2023-2024	Year 4 2024-2025	Year 5 2025-2026
1. Reallocated Funds	\$0	\$0	\$0	\$0	\$0
a. Number of F/T Students	3	6	8	10	12
b. Annual Tuition/Fee Rate	\$9,000	\$9,000	\$9,900	\$9,900	\$10,800
c. Total F/T Revenue (ax b)	\$27,000	\$54,000	\$79,200	\$99,000	\$129,600
d. Number of P/T Students	\$0	\$0	\$0	\$0	\$0
e. Credit-Hour Rate	\$0	\$0	\$0	\$0	\$0
f. Annual Credit -Hour Rate		\$0	\$0	\$0	\$0
g. Total P/T Revenue (d+e+f)	\$0	\$0	\$0	\$0	\$0
3. Grants, Contracts & Other External Resources	\$0	\$0	\$0	\$0	\$0
4. Other Sources, fees \$1,380 per year	\$1,800	\$3,600	\$6,000	\$7,500	\$9,000
TOTAL (Add 1-4)	\$28,800	\$57,600	\$85,000	\$106,500	\$138,600

Narrative:

1. No reallocated funds are incorporated into the program budget.
2. The proposed 2021-2022 tuition rate will be reviewed by the Board of Trustees in March 2021. Projections for years three through five assume a 3 percent increase.
3. Other sources (item 4) include the technology fee.

Expenditure Categories	Year 1 2020-2021	Year 2 2021-2022	Year3 2022-2023	Year4 2023-2024	Year 5 2024-2025
1. Faculty (adjunct) (b + c below)	0	0	0	\$2,700	\$2,700
a. Number of FTE	0	0	0	1	1
b. Total Salary (adjunct)	0	0	0	\$2,700	\$2,700
c. Total Benefits	0	0	0	0	0
2. Administrative Staff (b+c)	0	0	0	0	0
a. Number of FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
3. Support Staff (b+c)	0	0	0	0	0
a. Number of FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
5. Library	\$3,000	0	0		0
6. New or Renovated Space	0	0	0	0	0
7. Other Expenses	0	0	\$850	0	0
8. TOTAL (Add 1-7)	0	0	\$850	\$2,700	\$2,700

Narrative:

1. Faculty instructing the program will consist of full-time faculty with one additional adjunct in year 4 and 5. Full-time faculty teaching load is included in their teaching load and the faculty salary included here represents adjunct stipends.
2. Technical support includes software and hardware upgrades will be applied every third year, consistent with best practices.
3. Library expenses will include materials specific to actuarial science added to the collection to augment the already strong holdings in business (economics, accounting, finance and risk.)
4. Space requirements are currently adequate.

M. Adequacy for Provisions for Evaluation of Program (as outlined in COMAR 13B.02.03.15)

Students enrolled in courses delivered via all modalities complete an online anonymous course evaluation. The course evaluation invites student comment on the learning experience, plus the pedagogy and design of the course.

Faculty receive the results of such evaluations after semester grades are submitted and are asked to review the information and to explain any need for course improvements in writing. Department chairs review the course evaluations, comment on the faculty member's findings as part of the annual formative evaluation process, and make suggestions to the faculty member. The school dean reviews all course evaluations as part of the yearly faculty evaluation process and may comment as necessary in writing as part of the process. The chair and the dean assist the faculty member in setting goals for teaching improvement.

As part of the two-year probationary faculty evaluation process, department chairs observe courses at least once each semester and counsel the faculty member regarding readiness for promotion and tenure. These "early-on" conversations are formative in nature and are intended to better prepare faculty for advancement in rank.

As detailed in section G.3, student learning outcomes will be assessed at the course and program levels based on the specific analytical and computational/ quantitative competencies required of actuaries. Specific assessment tools (e.g., computer programming assignments, case studies, problem sets) will be used within the curriculum to assure student progress through the major. The certification tests provided by an external body will provide useful comparative data on program outcomes and guidance for curriculum change.

Learning outcomes assessments for all programs are submitted annually to the School of Arts, Sciences and Business Assessment Committee. The findings of that Committee are submitted to the dean and the University Assessment Committee. The University Assessment Committee reviews the integrity and reliability of the process and identified needs as well as makes budget recommendations to the University Budget Committee.

At times, specific needs of an academic support nature, staffing or hard resources such as technology may result from this analysis. Resource allocation requests to improve achievement of learning outcomes are reviewed by the Dean, the University Assessment Committee and the Provost.

Final decisions related to budget allocations are reached via the deliberations of the University Budget Committee consistent with parameters set by the Board of Trustees.

For new degrees, progress in reaching enrollment benchmarks and developing program courses is reported regularly to the School Curriculum Committee and the Faculty Senate. Oversight is provided at scheduled meetings of the chair/program academic leader with the dean and Provost.

A more comprehensive review of all aspects of a program and its contribution to the University and School mission takes place every five years. In this process, longitudinal enrollment patterns, issues of student retention, cost effectiveness, and faculty retention and satisfaction are underscored. Long-term resourcing and potential for growth are scrutinized. Of course, student academic achievement is central. The program department faculty, the School Curriculum Committee, the School Assessment Committee, the Offices of the Provost and the Dean, and the University Assessment Committee all participate in stages of this process.

N. Consistency with the State's Minority Student Achievement Goals (as outlined in COM AR 13 B.02.03.05)

Notre Dame is proud of the diversity of its undergraduate population, both Women's College and Adult Undergraduate Studies, and its particular Mission focused on meeting the needs of the underserved in the City and the surrounding region.

Actuarial science will be a challenging PBC requiring serious academic focus. The University wants to invite diverse groups of students into this major so that they may be well represented in this profession. Success will depend on academic support as well as services that help students address financial and personal stressors. Notre Dame is positioned to deliver on these needs.

O . Relationship to Low Productivity Programs Identified by the Commission

Institutional resources will not be redistributed to support this program. Establishing this major will not result in reduction of fiscal resources for another program. Courses in the program are already offered, most in both face-to-face and on-line modalities, with the exception of one new course to be developed, and faculty are already deployed for those classes.

P. Adequacy of Distance Education Programs (as outlined in COMAR 13 B.02 .03. 22)

NDMU, a member of Maryland Online, has adopted the Quality Matters standards as the guidelines for design, development and delivery of all online courses and programs at Notre Dame. Courses are developed under the criteria outlines in the QM rubric, and go through an internal peer

review process (QM qualified reviewers) prior to delivery. Faculty wishing to teach online are required to complete two QM courses that review best practice in design and delivery of online courses and programs.

Prior to January 1, 2018, Notre Dame of Maryland was approved by the Commission to offer several distance education programs. Per COMAR 13B.02.03.22A(1). Notre Dame of Maryland University is an institution eligible to provide distance education. As a member of NC-SARA, NDMU complies with C-RAC guidelines.