LOYOLA UNIVERSITY MARYLAND

— 1852 —

Office of the Provost

May 12, 2020

James D. Fielder, Ph.D.
Secretary of Higher Education
Maryland Higher Education Commission

via email (acadprop.mhec@maryland.gov)

Dear Secretary Fielder:

The Rev. Joseph A. Sellinger, S.J., School of Business and Management proposes to create a discrete major of its existing concentration in information systems. The proposal results from university wide curricular review and renewal and a commitment to innovation. On behalf of the university, I write to ask for your recommendation to implement the Information Systems & Data Analytics BBA, CIP code: 11.0401. The proposal has my support and approval and that of Loyola's faculty, Board of Trustees, and president.

Please find attached to this email a scanned copy of the check for the substantial fee of $850.

We trust you will find the proposal packet to be complete, and we eagerly await your recommendation.

Sincerely,

Amanda M. Thomas, PhD
Provost and Vice President for Academic Affairs

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Cover Sheet for In-State Institutions
New Program or Substantial Modification to Existing Program

Institution Submitting Proposal	Loyola University Maryland

Each action below requires a separate proposal and cover sheet.

- (●) New Academic Program
- ( ) New Area of Concentration
- ( ) New Degree Level Approval
- ( ) New Stand-Alone Certificate
- ( ) Off Campus Program
- ( ) Substantial Change to a Degree Program
- ( ) Substantial Change to an Area of Concentration
- ( ) Substantial Change to a Certificate Program
- ( ) Cooperative Degree Program
- ( ) Offer Program at Regional Higher Education Center

Payment Submitted:	Payment Type:	Payment Amount:	Date Submitted:
(●) Yes ( ) No	( ) R*STARS (●) Check	$850	May 13, 2020

Department Proposing Program	Information Systems, Law and Operations	
Degree Level and Degree Type	Bachelor of Business Administration (BBA)	
Title of Proposed Program	Information Systems & Data Analytics	
Total Number of Credits	120 credits	
Suggested Codes	HEGIS:	CIP: 11.0401
Program Modality	(●) On-campus	( ) Distance Education (*fully online*)
Program Resources	(●) Using Existing Resources	( ) Requiring New Resources
Projected Implementation Date	(●) Fall ( ) Spring ( ) Summer	Year: 2020
Provide Link to Most Recent Academic Catalog	URL: https://catalogue.loyola.edu/index.php?catoid=16	
Preferred Contact for this Proposal	Name: David Mack	
	Title: Academic Compliance and Assessment Specialist	
	Phone: (410) 617-2317	
	Email: dsmack@loyola.edu	
President/Chief Executive	Type Name: Rev. Brian F. Linnane, S.J.	
	Signature: [signature]	Date: 2/13/20
	Date of Approval/Endorsement by Governing Board:	2/12/20

Revised 3/2019

LOYOLA UNIVERSITY MARYLAND

Proposal: BBA in Information Systems and Data Analytics

Introduction

Loyola University Maryland has offered undergraduate business and accounting programs since the early 1940s and began its MBA in 1967. The programs are well-established and have educated generations of business leaders. Since the early 1990s, Loyola has offered concentrations continuously in Business Economics, Finance, Information Systems, International Business, Management, and Marketing. Loyola University Maryland seeks to establish these programs as standalone undergraduate majors. These proposals are the result of university-wide curricular review and renewal.

Loyola's faculty engaged in a review of its core curriculum (the curricular requirements common among all Loyola undergraduate students) and made modest changes to it in concert with the request for modest changes to major programs of study that have extensive course requirements. The faculty's goals for the curricular changes aimed to provide students more flexibility in course-taking and more curricular innovation while upholding Loyola's distinctive identity as a Jesuit liberal arts institution. The Undergraduate Curriculum Committee (UCC) set forward its mission-centered vision for the core curriculum and conducted a thorough review of student outcomes and satisfaction. Among several other findings, the UCC's analysis demonstrated that students would benefit from a greater number of electives, especially students in STEM, education, and business majors because it would allow them to accommodate a greater variety of minors.

The Sellinger School of Business and Management worked diligently to meet this recommendation from the Undergraduate Curriculum Committee. Some discussions began as early as fall 2018, the Sellinger academic departments worked on curricular review and deliberations spring-fall 2019, and faculty began school-wide engagement in spring 2019. A table in each proposal displays the extensive review and consultation that the Sellinger School used for gathering input from its many constituents, including advisory boards for each program, students, and alumni.

Ultimately, the Undergraduate Curriculum Committee, Loyola's Academic Senate, and its Board of Trustees reviewed and approved recommendations to establish discrete majors and create the curricular change desired to prepare Sellinger students better for their first professional positions and for eventual promotions. These changes result in required course and credit reductions, increased opportunities for a variety of high-impact teaching practices, and the availability of more elective courses so that students will now be able to pursue a variety of minors, explore an area of interest in depth, or explore several areas of interest with breadth. The curricular changes will invigorate Loyola's business offerings and update them to meet the needs of businesses and demands of students.

The Maryland Higher Education Commission (MHEC) was aware of the existence of these concentrations, beginning in the early 1990s, as part of annual catalogue reviews and audits for veterans' benefits. Loyola has since attempted to work with MHEC to correct the omission of these concentrations from MHEC's academic program inventory (API) through the MHEC API

reconciliation process.[1] The omission of these concentrations from MHEC's official academic program inventory is not reflective of Loyola's business program offerings. Unfortunately, at this time, the discrepancy in the inventory makes these submissions appear as though they propose brand new programs when, in reality, we wish to make discrete majors from concentrations that have existed for three decades as we work to meet the demands of a changing higher education landscape and to embrace curricular innovation, such as expansion of high-impact teaching practices. Loyola asks that the Secretary approve these discrete majors to serve student and business community needs and to allow Loyola to meet its obligation to continuously improve in fulfilling its academic mission.

A. Centrality to Institutional Mission and Planning Priorities:

1. Provide a description of the program, including each area of concentration (if applicable), and how it relates to the institution's approved mission.

Loyola University Maryland's mission statement makes clear its commitment to the educational and spiritual traditions of the Society of Jesus and to the ideals of liberal education and the development of the whole person, as a Jesuit, Catholic university. Accordingly, it states, the University will inspire students to learn, lead, and serve in a diverse and changing world.

Loyola, established in 1852, has been serving students and the Baltimore business community for more than 75 years. The Sellinger School of Business and Management focuses on inspiring and preparing students to become responsible business leaders who make their companies and their communities stronger. The Sellinger School earned initial AACSB accreditation in 1988 and now maintains dual AACSB accreditation for accounting and business administration programs.

The information systems, law and operations department at Loyola offers a Bachelor of Business Administration with a concentration in Information Systems. This proposal would make the program a discrete major—the BBA in Information Systems and Data Analytics.

The Information Systems and Data Analytics (ISDA) major prepares students to strategically utilize digital technologies and data analytics in any business-related field and communicate the results effectively to technical and nontechnical audiences. Students learn to adapt to a wide range of current and emerging technologies for technological agility, employ higher-order cognitive abilities for evidence-based decision making, and consider the impact of technology on society.

2. Explain how the proposed program supports the institution's strategic goals and provide evidence that affirms it is an institutional priority.

The introduction to Loyola's several business program proposals explains how the proposed establishment of discrete majors fits within the much larger context of curricular renewal at Loyola and how these proposals work in concert with modest changes to Loyola's core curriculum to allow students more agency in their studies and flexibility in providing more elective courses to students.

[1] Regulation of "area of concentration" does not appear in COMAR until 1996 and is not defined as we understand it today until 2012, so Loyola understood the pre-existing concentrations as "grandfathered" in the inventory.

In addition, the proposals support the University's strategic plan goals for Educational Innovation and embrace the academic division's goals to increase student academic engagement through high-impact teaching practices, to promote inclusive academic excellence, and to broaden the impact of innovation. More specifically, the proposals support the University's strategic goals in the following ways.

- Consistent with the Sellinger School's theme of *Building a Better World Through Business*, each proposed business major program focuses on enhancing the Loyola experience through understanding the role of business in creating economic opportunity for all – including the marginalized – while preparing students for 21st century career opportunities.
- Through course-embedded high-impact practices, an array of co-curricular opportunities, and deliberate mentoring, business students are encouraged to understand and be able to articulate the importance of the liberal arts to excellence in business leadership.
- Through the business foundations courses, students learn to integrate knowledge and skills across the business disciplines. This curriculum, building on and combined with the Loyola core curriculum, prepares students to identify market and societal needs and address contemporary challenges.
- Each proposed business major program includes a required capstone course which will connect general business and major-specific knowledge with the Loyola core curriculum. These capstone courses demonstrate to students the power that Jesuit values will have as they advance to leadership roles and work to build a better world through business.
- Each proposed business major program incorporates several course-embedded high impact practices (HIPs) and a number of co-curricular opportunities to enhance each student's sense of belonging and to promote inclusive academic excellence.
- Each proposed business major program adds a new learning outcome related to Diversity, Equity, and Inclusion.
- The revisions to Sellinger's undergraduate curriculum are innovative:
    - The proposed structure of Business Foundations courses reflects a different way of meeting AACSB accreditation requirements than the approaches employed by peer, competitor, and aspirational schools. Most of those schools meet accreditation requirements by establishing independent courses to teach each area of business knowledge, whereas the proposed program integrates some business topics (e.g., international business and global awareness) across the curriculum.
    - Each proposed major explicitly integrates High Impact Practices to assure that all students experience multiple HIPs. This ensures that each student has those experiences.
    - A few of the proposed majors incorporate Loyola College of Arts and Sciences courses as opportunities to fulfill major requirements (e.g., BBA-Marketing).
    - Many business courses, with or without embedded High Impact Practices, and many co-curricular opportunities help students to develop creative and optimistic habits of mind to enhance their ability to recognize and define problems and seek solutions to those problems (e.g. IS251 and Capstone Courses, and the annual *Building a Better World Through Business* pitch competition).

3. Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation. (Additional related information is required in section L.

The Sellinger School of Business already supports the program as a concentration. The academic department, faculty with disciplinary expertise, instructional facilities, and academic supports already exist at Loyola and are supported as institutional priorities. The budget and resources for the program already exist and will continue to be provided.

4. Provide a description of the institution's a commitment to:

    a) ongoing administrative, financial, and technical support of the proposed program

The Sellinger School's academic associate dean and department chairs will be responsible for academic leadership. For administrative matters, they will be assisted by the assistant dean for programs and the undergraduate program assistant. Advising responsibilities will be shared by faculty in the department and, if necessary, by other Sellinger faculty who do not have major-specific advising responsibilities.

No additional faculty, administrator, or staff resources are required to support the program.

    b) continuation of the program for a period of time sufficient to allow enrolled students to complete the program.

Loyola University Maryland has established its commitment to the program over decades. The information systems department has existed since the establishment of the Rev. Joseph A. Sellinger, S.J., School of Business and Management in 1980. Instruction in information systems within the BBA degree has existed since the mid-1980s, and the concentration has been offered continuously since first published in Loyola's 1990-91 catalogue. Loyola's business programs are important to the University, and Loyola's commitment will continue, unabated.

B. Critical and Compelling Regional or Statewide Need as Identified in the State Plan:

1. Demonstrate demand and need for the program in terms of meeting present and future needs of the region and the State in general based on one or more of the following:

Loyola's current information systems concentration of the BBA degree program has produced 104 graduates in the last five years. This demonstrates existing demand and the potential success for the proposed major. We project a similar size for our major. Loyola anticipates no net new enrollments as it expects a redistribution of enrollment from the existing concentration.

Table B1.1. Graduated Concentration Trends from 2015-2019

Concentration	2015	2016	2017	2018	2019	Total	Average
Information Systems	12	13	22	19	38	104	21

(Source: Loyola University Maryland Office of Institutional Research)

Table B1.2. Enrollment Projection - Proposed BBA, Information Systems & Data Analytics

	Enrollment Projections*				
Proposed major	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Information Systems & Data Analytics BBA	21	42	63	63	63

*Enrollment projections for the major are based on the average graduation numbers of the existing concentration.

All higher education-related career fields are increasingly information-intensive and technologically dependent. Thus, all undergraduate business students need the foundational skills in data analytics and emerging technologies to succeed in the 21st century. The Information Systems & Data Analytics major focuses on technology skills and the use of data analytics to inform decision making together with the ability to communicate to technical and non-technical audiences. The proposal supports Loyola's Strategic Plan 2017-2022 to "address changing career expectations and requirements, global citizenship, and the adaptability needed in today's working world, while continuing to hold fast to the values of *eloquentia perfecta* and critical thinking". STEM fields are a national and Maryland state priority.

The National Association of Colleges and Employers (NACE) reports high demand for business majors, including in some of Maryland's strongest industries.

Table B1.3. Top Bachelor's Degrees in Demand, 2018

MAJOR	# OF RESPONDENTS THAT WILL HIRE	% OF RESPONDENTS THAT WILL HIRE
Computer Science	73	55.3%
Management Information Systems	66	50.0%
Information Sciences & Systems	64	48.5%

(Source: National Association of Colleges and Employers)

In addition to this information regarding demand for business degrees, major-specific information is provided below.

2. Provide evidence that the perceived need is consistent with the **Maryland State Plan for Postsecondary Education**.

The Maryland State Plan for Postsecondary Education focuses on three overarching goals: access, success, and innovation. Loyola University Maryland's proposals to create discrete majors from existing business administration concentrations increase the transparency of the offerings and result from a university-wide curricular renewal initiative. The university's strategic goals emphasize educational innovation, through the incorporation of high-impact teaching practices endorsed by the American Association of Colleges and Universities (AAC&U). The faculty's efforts for curricular renewal aim to provide students greater flexibility of course requirements and opportunities to explore academic areas of interest with more agency and self-efficacy. These changes are all designed toward building greater success for students through inclusive academic excellence.

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

1. Describe potential industry or industries, employment opportunities, and expected level of entry (*ex: mid-level management*) for graduates of the proposed program.

Information Systems encompasses a wide range of technology careers related to business and computer occupations. These career fields include data analytics experts, network specialists, systems analysts, database administrators, cyber security specialists, technology consultants, and web developers. According to the Bureau of Statistics, "Employment of computer and information technology occupations is projected to grow 12% from 2018 to 2028, much faster than the average for all occupations. These occupations are projected to add about 546,200 new jobs. Demand for these workers will stem from greater emphasis on cloud computing, the collection and storage of big data, and information security. The median annual wage for computer and information technology occupations was $86,320 in May 2018, which was higher than the median annual wage for all occupations of $38,640." Most of these occupations show entry-level education as a bachelor's degree.

2. Present data and analysis projecting market demand and the availability of openings in a job market to be served by the new program.

Strong growth is projected in related fields, according to Bureau of Labor Statistics data.

Table C2. Projected Workforce Needs

Occupation	Nation/State	Employment		% Change	Projected Annual Job Openings
		2016	2026		
Computer and Information Systems Managers	United States	367,600	411,800	12%	32,500
	Maryland	8,980	9,540	6%	720
Computer and Information Research Scientists	United States	27,900	33,200	19%	2,500
	Maryland	2,560	2,660	4%	180
Software Developers and Systems Software	United States	425,000	472,100	11%	32,900
	Maryland	16,350	17,570	8%	1,160
Software Quality Assurance Engineers and Testers, Web Administrators, GIS Technologists and Technicians, Database Architects and Warehousing Specialists, Business Intelligence Analysts, Search Marketing Strategists, Document Management Specialists	United States	287,200	313,800	9%	22,400
	Maryland	14,460	14,780	2%	950

national	Total Maryland Projected Annual Job Openings
90,300	3,010

3. Discuss and provide evidence of market surveys that clearly provide quantifiable and reliable data on the educational and training needs and the anticipated number of vacancies expected over the next 5 years.

As shown above, strong job growth is projected with large numbers of annual job openings at the state and national levels in fields related to an information systems & data analytics major.

4. Provide data showing the current and projected supply of prospective graduates.

The following degree trends data provide analysis of bachelor's degrees in information systems in Maryland. It does not include analysis of business programs with concentrations, tracks, specializations, or minors in information systems because MHEC does not track enrollment or degree data at those levels.

Table C4. Degree Trends

School Name	Degree Level	Program Name	2015	2016	2017	2018	2019	
Coppin State University	BACHELORS	MANAGEMENT INFORMATION SYSTEMS	1	6	5	4	3	
Frostburg State University	BACHELORS	COMPUTER INFORMATION SYSTEMS	12	8	4	10	11	
Salisbury University	BACHELORS	INFORMATION SYSTEMS	67	54	59	56	68	
Towson University	BACHELORS	INFORMATION SYSTEMS	51	36	52	40	52	
Univ. of MD, Baltimore County	BACHELORS	INFORMATION SYSTEMS MANAGEMENT	170	186	177	218	265	
Univ. of MD, College Park	BACHELORS	INFORMATION SYSTEMS	88	102	90	110	122	
Univ. of MD Global Campus	BACHELORS	INFORMATION SYSTEMS MANAGEMENT	225	192	270	285	245	
Morgan State University	BACHELORS	INFORMATION SYSTEMS	19	30	23	33	42	
Mount St. Mary's University	BACHELORS	INFORMATION SYSTEMS	6	3	3	6	4	
Notre Dame of Maryland University	BACHELORS	COMPUTER INFORMATION SYSTEMS	1	2	0	0	1	
Stevenson University	BACHELORS	COMPUTER INFORMATION SYSTEMS	53	65	44	45	46	
Stevenson University	BACHELORS	BUSINESS INFORMATION SYSTEMS	14	14	11	13	10	
Washington Adventist University	BACHELORS	INFORMATION SYSTEMS	7	4	3	1	2	**AVERAGE**
		Subtotal:	**714**	**702**	**741**	**821**	**871**	**770**

Source: MHEC Degree Trends data

D. Reasonableness of Program Duplication:

1. Identify similar programs in the State and/or same geographical area. Discuss similarities and differences between the proposed program and others in the same degree to be awarded.

As shown above, several Maryland institutions have an information systems major. This is the case for most AACSB-accredited business schools of the size of Loyola's Sellinger School of Business and Management.

2. Provide justification for the proposed program.

An information systems degree program is commonly offered by accredited business schools. Much as humanities programs are treated within the liberal arts, some traditional business programs are expected to be part of the portfolio of business schools. Loyola is not attempting to establish a whole-cloth new program, but instead, seeks to make the offering transparent among the Maryland higher education community while addressing the curricular renewal that has resulted from internal review, deliberation, and planning for the success of our students in changing higher education and business community landscapes.

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

1. Discuss the program's potential impact on the implementation or maintenance of high-demand programs at HBI's.

Loyola does not anticipate any impact on the implementation or maintenance of high-demand programs at HBIs in Maryland. However, prior to making these proposals to MHEC, Loyola's president, the Rev. Brian F. Linnane, S.J., reached out to Dr. David Wilson, president of Morgan State University, which is Loyola's neighbor. Fr. Linnane wished to inform Dr. Wilson of Loyola's plans to submit the proposals, after the proposals were approved by Loyola's Board of Trustees in February 2020. As a result of the call, Loyola hopes to continue conversations with Morgan State University. The amount of time for conversations prior to submission to MHEC was curtailed by the necessary campus responses to the COVID-19 State of Emergency.

The proposals have been submitted at this time with the hope to receive the Secretary's recommendation for implementation in time for inclusion in the 2020-21 catalogue.

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

1. Discuss the program's potential impact on the uniqueness and institutional identities and missions of HBIs.

Loyola proposes to make discrete majors from existing areas of concentration. These undergraduate business programs should not have any impact on the uniqueness and institutional identities and missions of HBIs because the programs are typical of business schools across the state and across the nation.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes (as outlined in COMAR 13B.02.03.10):

1. Describe how the proposed program was established, and also describe the faculty who will oversee the program.

As stated earlier, the study of information systems has existed at Loyola for decades. However, the proposal to create a discrete major for the program results from university-wide discussions about student success, continuous improvement, and curricular renewal. Loyola's faculty asked large programs to engage in a reduction of course requirements in concert with minor reductions to the core curriculum so that students could benefit from greater flexibility in the degree programs and have more autonomy in exploring academic areas of interest. Students desired the academic flexibility, faculty sought to provide them that flexibility, and the campus engaged in deep, serial conversations at the university, school, department, and program levels.

The information systems, law and operations (ISLO) department and faculty discussed the curricular changes and the proposal from March-October 2019. Program stakeholders and constituents, including the board of sponsors, the departmental board of advisors, students, and alumni, provided input along the way through a transparent and collaborative process. The Undergraduate Curriculum Committee endorsed the program proposal, and the Academic Senate and the Board of Trustees each approved the program proposal. The table below depicts the many conversations held about business foundational courses and the advanced course of the discipline.

Table G1. Input Processes – Sellinger Business Programs

Body/Action		Foundational Courses	Advanced Courses
		Date	Date
Sellinger Leadership Team timeline discussion		12/5/18	12/5/18
Departmental Work			March-October 2019
Curriculum Committee		8/12/19, 8/23/19, 9/11/19, 10/14/19	9/11/19 and 10/24/19
Sellinger School Faculty	Retreat	5/2/19	
	Retreat	8/29/19	8/29/19
	Assembly Meeting	9/9/19	9/9/19
	Open Forum		10/2/19
	Open Forum		10/11/19
	Assembly Meeting	10/21/19	10/21/19
Sellinger Board of Sponsors Review		5/2/19; 9/26/19	5/2/19; 9/26/19
ISOM Board of Advisors Review			10/3/18; 2/27/19; 5/1/19; 10/17/19
Graduate Alumni Board Review		9/13/19	

Body/Action	Foundational Courses	Advanced Courses
	Date	Date
Student Advisory Board	9/30/19	
Academic Senate	11/19/19 and 12/10/19	11/19/19 and 12/10/19
Board of Trustees	2/12/2020	2/12/2020

Faculty

James (Jay) Brown, Associate Professor of Operations Management, will teach (OM260) Supply Chain & Operation Management. Dr. Brown earned a BBA in Operations Management, an MBA and a PhD in Operations Management from Kent State University. He joined Loyola in 2013.

Christy DeVader, Associate Professor of Management, will teach (MG201) Management. Dr. DeVader has a BS in Psychology from Fort Hayes State University and a PhD from the University of Akron in Industrial/Organizational Psychology. She joined Loyola in 1987.

D. Scott Emge, Executive in Residence of Finance, will teach (FI320) Financial Management. Mr. Emge earned a BS in Accounting from Towson State University and an MBA from the University of Maryland. He joined Loyola in 2017.

Frank Izzo, Lecturer of Accounting will teach (AC202) Managerial Accounting. Mr. Izzo received his BS and MPA (Master's in Professional Accountancy), from Loyola University Maryland. He joined Loyola in 2006 as an Affiliate Instructor and became full-time in 2018.

Elizabeth Kennedy, Associate Professor of Law & Social Responsibility, will teach (LW305) Law & Social Responsibility. Ms. Kennedy has two degrees, a BA from Smith College and a JD from the University of California, Berkeley. She joined Loyola in 2007.

John Krahel, Associate Professor of Accounting, will teach (AC201) Financial Accounting. Dr. Krahel received his BA and MAcc from Rider University and his PhD in Accounting from Rutgers University. He joined Loyola in 2012.

Marie Yeh, Associate Professor of Marketing, will teach (MK240) Marketing Principles. Dr. Yeh has a PhD in Marketing with a minor in Economics/Applied Science from Kent State University, an MSEd in Counseling from Old Dominion University and a BS in School Health Education from the University of Maryland, College Park. She joined Loyola in 2013.

Dobin Yim, Assistant Professor of Information Systems, will teach (IS251) Data Analytics & Information Systems. Dr. Yim earned several degrees. He received a BS and MS from Brown University, an MBA and a MA from the University of California, Irvine. He received his PhD in Information Systems from the University of Maryland, College Park. He joined Loyola in 2019.

Michael Best, Affiliate Instructor of Information Systems, will teach (IS355) Cyber Security & Networks. Mr. Best earned a BS in Electrical Engineering from Dalhouse University, BS in Mathematics from Acadia University and an MBA from the University of Maryland, College Park. Mr. Best joined Loyola in 2020.

Theresa Jefferson, Associate Professor of Information Systems, will teach (IS358) Business Intelligence & Data Mining. Dr. Jefferson earned her BS in Operations, Research & Computational Science, her MS in Management Science, and her DSc in Information Management from George Washington University. She joined Loyola in 2011.

Jake London, Assistant Professor of Information Systems, will teach (IS352) Introduction to Programming in Python. Dr. London earned his BS from the University of Georgia, MBA from Augusta University and his PhD in Management – Information Systems from Clemson University. He joined Loyola in 2018.

Shelley McGarry, Affiliate Instructor of Information Systems will teach (IS453) Information Systems Analysis & Design. Ms. McGarry received a BS in Healthcare Management, an MBA of Information Systems from Johns Hopkins University and an MBA in Management from Loyola University Maryland. Ms. McGarry joined Loyola in 2008.

Gloria Phillips-Wren, Professor of Information Systems, will teach (IS458) Web Enabled Entrepreneurial Project. Dr. Wren has five degrees, most notably an MEd from Towson University, an MBA Fellows from Loyola University Maryland and a PhD in Information Systems from UMBC. Dr. Wren joined Loyola in 2001.

Paul Tallon, Professor of Information Systems, will teach (IS353) Data Management & Database Systems. Dr. Tallon received a Bachelor of Commerce and a Master of Management Science from University College Dublin and earned a PhD in Management from the University of California, Irvine. Dr. Tallon joined Loyola in 2008.

2. Describe educational objectives and learning outcomes appropriate to the rigor, breadth, and (modality) of the program.

The BBA in Information Systems and Data Analytics aligns its program learning outcomes to the University's undergraduate learning aims, particularly those related to Intellectual Excellence and Critical Understanding. The Information Systems and Data Analytics learning outcomes follow:

- Students will demonstrate superior skills and competencies in information systems and development environments to contribute to an organization upon entry. (e.g., Excel, Access, Oracle, SAS, SQL, Python, etc.)
- Students will demonstrate evidence-based decision making and higher-order cognitive skills to analyze an unstructured problem, formulate and develop a solution using appropriate technology, and communicate the results to stakeholders.
- Students will demonstrate technological agility to adapt to emerging and disruptive technologies and identification of the role of information systems in enabling and innovating business processes.

3. Explain how the institution will:
    a) provide for assessment of student achievement of learning outcomes in the program

The Information Systems and Data Analytics program will follow the usual assessment practices of the Sellinger School. The Sellinger School of Business has employed a continuous improvement process to assess its learning goals of effective communication, analytical and critical thinking, knowledge and integration of functional area content, ethical leadership, global awareness, and (forthcoming) equity, diversity, and inclusion. Accredited by the AACSB, the five-year assessment cycle is accomplished at the program level through evaluation of both direct and indirect methodologies.

The direct methodology involves collecting student artifacts in key BBA foundational courses and assessing them using faculty created rubrics and an overall capstone examination (the ALBA). Outcomes from those assessments are forwarded to either the Sellinger Curriculum Committee or a related program partner group that in turn presents recommendations for curricular updates at the Sellinger Assembly and then ultimately university governance. The indirect methodology involves collecting feedback from our external constituencies (mainly advisory boards and hiring firm representatives) and evaluating that feedback by the Sellinger Leadership Team (SLT). This feedback then is forwarded to the Sellinger Assembly and university governance when warranted.

    b) document student achievement of learning outcomes in the program

All BBA programs at Loyola fulfill an extensive list of learning outcomes from the business foundation courses. Those learning outcomes and the assessment map are included in an appendix.

The same methodology, described above in 3a., will be adopted for assessment of major-specific learning outcomes. Student achievement will be documented in key assessment courses.

Table G3.b. Assessment Map for Information Systems and Data Analytics

Program Learning Outcome	Loyola Learning Aim	Assessment Course
Students will demonstrate superior skills and competencies in information systems and development environments to contribute to an organization upon entry. (e.g., Excel, Access, Oracle, SAS, SQL, Python, etc.)	Intellectual Excellence	IS 353
Students will demonstrate evidence-based decision making and higher-order cognitive skills to analyze an unstructured problem, formulate and develop a solution using appropriate technology, and communicate the results to stakeholders.	Critical Understanding	IS 358
Students will demonstrate technological agility to adapt to emerging and disruptive technologies and identification of the role of information systems in enabling and innovating business processes.	Critical Understanding	IS 453

4. Provide a list of courses with title, semester credit hours and course descriptions, along with a description of program requirements

The program requires 45 credits beyond the Loyola core. Course titles, credit hours, and descriptions follow in an attachment to the proposal.

Table G4. Curriculum: BBA Information Systems and Data Analytics

Course	New, Revised, Existing Course	Required or Optional	Includes High-Impact Practice?
Business Foundation Courses			
AC 201 Financial Accounting	Existing	Required	No
AC 202 Managerial Accounting	Existing	Required	No
IS 251 Data Analytics & Information Systems	Existing	Required	Yes
MG 201 Management Principles	Existing	Required	No
MK 240 Marketing Principles	Existing	Required	No
LW 305 Legal Environment of Business	Existing	Required	Yes
FI 320 Financial Management	Existing	Required	No
OM 260 Introduction to Supply Chain Management	Existing	Required	Yes
Advanced Major Courses			
IS 352 – Introduction to Programming in Python	Existing	Required	Yes
IS 353 - Data Management and Database Systems	Existing	Required	No
IS 355 - Cyber Security and Networks	Existing	Required	No
IS 358 - Business Intelligence and Data Mining	Existing	Required	Yes
IS 453 - Information Systems Analysis and Design	Existing	Required	Yes
One Elective from Computer Science, Mathematics, Business, Communication, Engineering.	Existing	Required	
IS 458 – Web-Enabled Applications - Entrepreneurial Project	Existing	Required	Yes
Electives			
Non-Departmental Electives (3 courses)			
Free Electives (7 courses)			

5. Discuss how general education requirements will be met, if applicable.

At Loyola, all undergraduate students are required to complete Loyola's Core Curriculum. The Core Curriculum comprises the foundations of a liberal arts education in the Jesuit tradition. Courses span areas in the humanities, social sciences and natural sciences/mathematics. They include disciplines such as writing, English, history, fine arts, theology, philosophy, and ethics. The diversity core course focuses on domestic diversity, global diversity, or justice.

6. Identify any specialized accreditation or graduate certification requirements for this program and its students.

N/A

7. If contracting with another institution or non-collegiate organization, provide a copy of the written contract.

N/A

8. Provide assurance and any appropriate evidence that the proposed program will provide students with clear, complete, and timely information on the curriculum, course, and degree requirements, nature of faculty/student interaction, assumptions about technology competence and skills, technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies.

All program requirements, including pre-requisites, curriculum, administration, financial aid, and any other relevant information will be maintained on the program's website and in the undergraduate catalogue. The department chair will be responsible for ensuring that the webpage is current and that students are informed of any changes. Individual course requirements will be clearly delineated on syllabi, as well as in catalogue descriptions prior to registration. The department chair will also be available to discuss program/course requirements and university services during office hours or by appointment.

Loyola provides support services that include an Office of Technology Services, Counseling Center, Disability Support Services, Financial Aid Office, a National Fellowships Office, and many other support services to assist students for success. As mentioned above, Loyola's website provides the appropriate program costs and student support resources, including required consumer information disclosures.

9. Provide assurance and any appropriate evidence that advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available.

Loyola University has a dedicated Office of Marketing and Communications. Loyola endorses and adheres to ethical principles and codes of conduct published by various national organizations. These include the Public Relations Society of America (PRSA) Code of Ethics, the National Association for College Admission Counseling (NACAC) Statement of Principles of

Good Practice, the National Association of Student Financial Aid Administrators (NASFAA) Statement of Ethical Principles and Code of Conduct for Institutional Financial Aid Professionals, American Association of Collegiate Registrars and Admissions Officers (AACRAO) Professional Practices and Ethical Standards, the NAFSA: Association of International Educators Statement of Ethical Principles, and the Association for Institutional Research (AIR) Code of Ethics, which are followed by the University Communications team, Admissions Offices, the Office of Financial Aid, the Records Office, the Office of International Programs, and the Office of Institutional Research, respectively.

H. Adequacy of Articulation

1. If applicable, discuss how the program supports articulation with programs at partner institutions. Provide all relevant articulation agreements.

N/A

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

1. Provide a brief narrative demonstrating the quality of program faculty. Include a summary list of **faculty with appointment type, terminal degree title and field, academic title/rank, status (full-time, part-time, adjunct) and the course(s) each faulty member will teach in the proposed program.**

The business faculty teaching in this program includes two tenured full professors, six tenured associate professors, two tenure-track assistant professors, all with terminal degrees in business; one Executive-in-Residence with a terminal business degree, two full-time lecturers who have master degrees in business administration and two part-time affiliated who have master degrees in business administration. The table below indicates the highest degree for each faculty member, and the courses that the faculty members would likely teach in the program.

Table I1. Faculty Credentials – BBA in Information Systems & Data Analytics

Name	Status	Title	Highest Degree/ Field	Course(s)
Business Foundation Courses				
Brown, Jay	Full-time	Associate Professor of Operations Management	PhD in Operations Management	OM260
DeVader, Christy	Full-Time	Associate Professor of Management	PhD in Industrial/Organizational Psychology	MG201
Emge, Scott	Full-time	Executive in Residence of Finance	MBA in Finance	FI320
Izzo, Frank	Full-time	Lecturer of Accounting	MPA, Accounting	AC202
Kennedy, Elizabeth	Full-time	Associate Professor of Law & Social Responsibility	JD, Law	LW305

Name	Status	Title	Highest Degree/ Field	Course(s)
Krahel, John	Full-time	Associate Professor of Accounting	PhD in Accounting	AC201
Yeh, Marie	Full-time	Associate Professor of Marketing	PhD in Marketing	MK240
Yim, Dobin	Full-time	Assistant Professor of Information Systems	PhD in Information Systems	IS251
Advanced Courses in the Major				
Best, Mike	Affiliate	Affiliate Professor of Information Systems	MBA	IS355
Jefferson, Theresa	Full-time	Associate Professor of Information Systems	DSc in Information Management	IS358
London, Jake	Full-time	Assistant Professor of Information Systems	PhD in Management, Information Systems	IS352
McGarry, Shelly Bliss	Affiliate	Affiliate Professor of Information Systems	MBA of Information Systems and an MBA in Management	IS453
Phillips-Wren, Gloria	Full-time	Professor of Information Systems	PhD in Information Systems	IS458
Tallon, Paul	Full-time	Professor of Information Systems	PhD in Management	IS353

2. Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidenced-based best practices, including training in:

    a) Pedagogy that meets the needs of the students

Loyola currently offers two formal university-wide teaching enhancement workshops each year for all faculty, as well as numerous less formal pedagogical opportunities throughout the year. Several workshop sessions are dedicated to pedagogical training for faculty and instructors, including discussions of best practices for promoting student learning. In 2018 Loyola established Teaching Fellows who research and then incorporate into their courses high-impact practices. The Fellows disseminate their findings and experiences to the faculty.

    b) The learning management system

Loyola uses the Moodle learning management system and support from the Office of Technology Services. Support includes a help line for faculty, several Moodle specialists, and Moodle training workshops to help faculty use Moodle effectively. The institution also provides

an Office of Digital Teaching & Learning that provides additional support and training for face-to-face courses that supplement learning with digitally enhanced supports.

c) Evidenced-based best practices for distance education, if distance education is offered.

This program is not a distance education program. However, the Office of Digital Teaching and Learning instructional designers are available to develop on-line classes. Loyola follows Quality Assurance Standards for Online Education Programs, including adhering to C-RAC guidelines.

J. Adequacy of Library Resources (as outlined in COMAR 13B.02.03.12)**.**

1. Describe the library resources available and/or the measures to be taken to ensure resources are adequate to support the proposed program.

The library resources for this program already exist because they are in place for the existing concentration. The president's signature on the proposal coversheet indicates his support for library resources to meet the program's needs.

K. Adequacy of Physical Facilities, Infrastructure and Instructional Equipment (as outlined in COMAR 13B.02.03.13)

1. Provide an assurance that physical facilities, infrastructure and instruction equipment are adequate to initiate the program, particularly as related to spaces for classrooms, staff and faculty offices, and laboratories for studies in the technologies and sciences.

Loyola currently possesses the necessary classroom and laboratory space, the appropriate instructional resources, and faculty offices to support the proposed program. The president's signature on the proposal coversheet indicates his support for adequate physical facilities, infrastructure, and instructional equipment for the program.

2. Provide assurance and any appropriate evidence that the institution will ensure students enrolled in and faculty teaching in distance education will have adequate access to:

a) An institutional electronic mailing system, and

Students are provided with an electronic mailing system and other technological tools upon enrollment. Loyola has several computer labs and uses a learning management system.

c) A learning management system that provides the necessary technological support for distance education

All students enrolled in the program are provided access to the university's learning management system. The Office of Technology Services provides technical support for all student email accounts and for those using the learning management system. The Office of Digital Teaching and Learning provides additional support to students and faculty specifically for distance education courses.

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

1. Complete **Table 1: Resources and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each resource category. If resources have been or will be reallocated to support the proposed program, briefly discuss the sources of those funds.

The program resources already exist because this major is being established from an existing area of concentration within the business administration bachelor's program.

TABLE L1: PROGRAM RESOURCES

Resource Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Reallocated Funds	0	0	0	0	0
2. Tuition/Fee Revenue (c + g below)	$0	$0	$0	$0	$0
a. Number of F/T Students	0	0	0	0	0
b. Annual Tuition/Fee Rate	0	0	0	0	0
c. Total F/T Revenue (a x b)	0	0	0	0	0
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	0
g. Total P/T Revenue (d x e x f)	0	0	0	0	0
3. Grants, Contracts & Other External Sources	0	0	0	0	0
4. Other Sources (-Scholarship & Discounts)	0	0	0	0	0
TOTAL (Add 1-4)	$0	$0	$0	$0	$0

Notes:

No new revenue. Loyola anticipates no net new enrollments because it expects a redistribution of enrollment from the existing concentration.

2. Complete **Table 2: Program Expenditures and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each expenditure category.

The program resources already exist because this major is being established from an existing area of concentration within the business administration bachelor's program.

TABLE L2: PROGRAM EXPENDITURES

Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty (b + c below)	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
2. Admin. Staff (b + c below)	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 below)	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
4. Technical Support and Equipment	0	0	0	0	0
5. Library	0	0	0	0	0
6. New or Renovated Space	0	0	0	0	0
7. Other Expenses	0	0	0	0	0
TOTAL (Add 1-7)	$0	$0	$0	$0	$0

Notes:

No new resources required. Minor reallocation of course teaching loads will accomplish goals.

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

1. Discuss procedures for evaluating courses, faculty and student learning outcomes.

Loyola University Maryland uses several mechanisms for evaluating courses, including student course evaluations, faculty peer evaluations, and faculty annual updates. The latter require faculty to perform self-evaluation of courses and teaching effectiveness, and to provide evidence of student learning achievement. Faculty evaluations occur through annual faculty updates with their supervisors. Student learning outcomes are evaluated in alignment with university practice, as described above.

2. Explain how the institution will evaluate the proposed program's educational effectiveness, including assessments of student learning outcomes, student retention, student and faculty satisfaction, and cost-effectiveness.

The Sellinger School of Business adheres to AACSB accreditation standards and is made accountable through its periodic accreditation reviews. The proposed program's educational effectiveness will be monitored through the usual annual processes within the Sellinger School and the academic division. The School's course-based assessment of student learning is collected centrally, and reports are made to the Sellinger Curriculum Committee. The associate dean holds responsibility for oversight of assessment in Sellinger and sits on the university-wide assessment committee, where he shares the School's findings on student learning achievement. Findings are used for the continuous improvement of academic programs.

Institutional evaluation will occur in accordance with the university's and the academic division's protocols, including reviews of student retention, student and faculty satisfaction, and cost effectiveness, reviewed annually by the dean.

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

1. Discuss how the proposed program addresses minority student access & success, and the institution's cultural diversity goals and initiatives.

Loyola University Maryland has a strategic focus on enhancing equity and inclusion for the university community. The university is committed, through its mission and core values, to creating a community that recognizes the inherent value and dignity of each person. The strategic plan goal to enhance equity and inclusion guides faculty and administrators' work toward promoting inclusive academic excellence. Specifically, teaching practices identified by AAC&U as highly impactful for the success of all students are being incorporated more fully in academic and co-curricular programs across the university. The provost has invested in related professional development by funding new cohorts of faculty fellows each year to explore, employ, disseminate, and support high-impact teaching strategies. Faculty Fellows for High-Impact Practices (HIPs) are represented in all three schools, including the Sellinger Business School. Following a similar model, a cohort for Equity & Inclusion Fellows is forthcoming.

Regarding access at the undergraduate level, there are institutionally-funded academic scholarships, need-based grants, and athletic grants, in addition to participation in the major federal and state student aid programs. Parents may also consider additional financing alternatives through the Federal Parent Loan Program (PLUS) and the TMS monthly payment plan. Loyola has been recognized as a top School for Value by Kiplinger's, Forbes, Money Magazine, Payscale.com, and the Princeton Review.

O. Relationship to Low Productivity Programs Identified by the Commission:

1. If the proposed program is directly related to an identified low productivity program, discuss how the fiscal resources (including faculty, administration, library resources and general operating expenses) may be redistributed to this program.

The proposed program is not a low productivity program.

P. Adequacy of Distance Education Programs (as outlined in COMAR 13B.02.03.22)

1. Provide affirmation and any appropriate evidence that the institution is eligible to provide Distance Education.
2. Provide assurance and any appropriate evidence that the institution complies with the C-RAC guidelines, particularly as it relates to the proposed program.

The proposed program is not a distance education program.

APPENDIX: COURSE DESCRIPTIONS AND PROGRAM REQUIREMENTS FOR INFORMATION SYSTEMS & DATA ANALYTICS BBA

Accounting Course Descriptions

AC 201 - Financial Accounting

(3.00 cr.) Focuses on introducing financial accounting which provides information for decision makers outside the entity primarily by means of general-purpose financial statements. Students acquire a basic knowledge of the language of business. Topics include the application of accounting theory and generally accepted accounting principles to business transactions encountered by corporations during the accounting cycle.

AC 202 - Managerial Accounting

(3.00 cr.) *Prerequisite: AC 201.* Introduces managerial accounting for internal decision makers. Students learn how to prepare and use financial information primarily for internal decision-making purposes. Topics include accounting for manufacturing, job order cost systems, incremental analysis, standard costs, budgeting, and statement of cash flows.

Business Economics Course Descriptions

EC 102 - Microeconomic Principles

(3.00 cr.) Investigates how individuals in market economies make decisions about what goods will be produced, how they will be produced, and for whom they will be produced. Students learn to analyze the impacts of changes in markets; illustrate the concepts of consumer demand and production; and explain the process of profit maximization under various market structures. Topics include the laws of supply and demand; behavior of firms in competitive and noncompetitive markets; functioning of labor and capital markets; poverty and income inequality; economics and the environment; economic systems in other countries.

EC 103 - Macroeconomic Principles

(3.00 cr.) *Prerequisite: EC 102.* Introduces macroeconomic equilibrium, its impact on unemployment and inflation, and the effect of economic policy initiatives on that equilibrium. Students learn to predict the qualitative effect on changes in economic aggregates on each other and on GDP. Topics include the business cycle; national income and product accounting; equilibrium in the aggregate demand-aggregate supply model; the multiplier; the national debt; financial intermediaries; money and its creation; fiscal and monetary policy; comparative advantage and the gains from international trade; commercial policy; foreign exchange markets; and the balance of payments. Effects of international transactions are incorporated with each topic.

EC 220 - Business Statistics

(3.00 cr.) *Prerequisite: MA 151* or MA 251 *or equivalent*. MA 151 or MA 251 may be taken concurrently. Introduces the concepts and application of statistics in management. Students learn to apply estimation and hypothesis testing to univariate and multivariate business problems. Topics include descriptive statistics and statistical inference; multiple regression; correlation; and trend and seasonal time series analysis.

***EC 102, EC 103, and EC 220 are taken as part of the Loyola Core Curriculum, as fulfilled by business majors.**

Finance Course Descriptions

FI 320 - Financial Management

(3.00 cr.) *Prerequisite: AC 201, EC 102; EC 220 (may be taken concurrently).* Studies the theory and practice of financial analysis and management in the corporate setting and its role in the larger economic environment. Students discuss what specific assets a firm should acquire, what total volume of funds should commit, and how the required funds of the firm should be financed. Topics include time value of money, risk and return

relationships, fundamental valuation theories, financial markets, capital investment decisions, cost of capital, capital structure, dividend policy, and international finance.

Information Systems Course Descriptions

IS 251 - Data Analytics and Information Systems

(3.00 cr.) *Prerequisite: CS 105 or CS 111 or CS 115 or CS 117 or CS 118 or CS 151 or CS 201 or CS 218.* Students examine the strategic role of information systems in organizations and the integration of data analytics into business activities enabling quality, timeliness, and competitive advantage. They are immersed in the collection, exploration, visualization and application of data to make informed business decisions. Students apply database, spreadsheet, and visualization skills to solve real world business challenges.

IS 352 – Introduction to Programming in Python

(3.00 cr.) *Prerequisite: IS 251 or BH 251; IS 353 (may be taken concurrently).* An introduction to software development with an emphasis on real-world applications. Students are introduced to programming in a modern computer language such as Python or Java. Principles of program design, programming structures, data structures, program testing, and debugging are covered. Emphasis is placed on developing a business application such as a mobile app. *No prior programming experience is required.*

IS 353 - Data Management and Database Systems

(3.00 cr.) *Prerequisite: EC 220, IS 251, MA 151 or MA 251; or written permission of the department chair.* Students analyze, create a logical design, and implement the physical design for a relational database system. The course includes significant exposure to SQL (Structured Query Language) in both Microsoft Access and Oracle. Students will also be exposed to the challenges associated with managing large amounts of data.

IS 355 - Cyber Security and Networks

(3.00 cr.) *Prerequisite: IS 353 or written permission of the department chair.* Explores the technologies underlying today's networking, multimedia, electronic business, and entertainment industries. This course balances technical and managerial content while covering a broad range of topics, including the strategic role of telecommunications, networking infrastructure, security, encryption, audio, video, intellectual property rights, and the history and politics of the telecommunications industries.

IS 356 - Information Technology for Financial Services

(3.00 cr.) *Prerequisite: FI 320, IS 251.* At a time when information is critical to corporate success, financial service firms continue to be the largest consumers of information technology (IT). The impact of IT across U.S. and European equities markets, brokerage companies, bond trading, and electronic banking is examined. Students gain a thorough understanding of how IT is used by financial services firms for competitive advantage. This course builds on the theory of equities markets by allowing students to engage in simulated stock market transactions and to apply financial theories in a practical, real-world setting.

IS 358 - Business Intelligence and Data Mining

(3.00 cr.) *Prerequisite: EC 220, IS 251, MA 151 or MA 251; or written permission of the department chair. IS 353 may be taken concurrently.* Students are introduced to data mining as a technology to discover information and knowledge from large datasets for business decisions. Students utilize SAS Enterprise Miner™ to perform data mining using methods such as clustering, regression and decision trees. Students develop a project using current business intelligence technology for data mining. Forms the foundation for customer relationship management in marketing and forensic accounting.

IS 360 - Management of Global Information Technology

(3.00 cr.) *Prerequisite: IS 251 or CS 301 or CS 312*. Exposes students to the challenges of establishing a successful and globally competitive information technology (IT) industry. Students study historical, economic, political, labor, and social factors leading to the establishment of country-specific centers of IT excellence. In particular, students study what led multinational corporations to base their overseas activities within a specific location. Students are

expected to attend a series of classes during the regular semester and to then travel to the international destination to meet with company executives and to tour company facilities.

IS 452 - Special Topics in Information Systems

(1-3.00 cr.) *Prerequisite: IS 251.* Students explore information systems in a variety of formats and subject areas.

IS 453 - Information Systems Analysis and Design

(3.00 cr.) *Prerequisite: IS 353 or written permission of the department chair.* Prepares students to play a significant role in the development of information systems in organizations. Students learn to complete the phases of the systems development life cycle-feasibility, analysis, design, implementation, and maintenance-using structured tools and techniques, project management, and oral presentations. Topics also include the roles of systems analysts, designers, and programmers, as well as global and ethical concerns in systems development.

IS 458 - Web-Enabled Applications

(3.00 cr.) *Prerequisite: IS 251, IS 352, IS 353, IS 358, and IS 453; or written permission of the department chair. IS 355 may be taken concurrently.* Students explore and apply effective use of the technologies associated with responsive web applications and digital business including HTML5, CSS3, JavaScript, Bootstrap, and jQuery, all essential to modern companies. In this capstone course, students integrate all of the previous information systems courses, develop a plan for an entrepreneurial business, and create a sophisticated web-enabled senior project.

IS 459 - Research Project in Information Systems

(3.00 cr.) Students develop individual research in a specific area of mutual interest with a faculty member. The student must begin with a written plan for the project and conclude with a written research report.

IS 460 - Data Visualization

(3.00 cr.) *Prerequisite: CS 485 or IS 353; or written permission of the department chair.* Students investigate human processing of information and appropriate representation of data in a visual form. Data come in many forms such as structured data in databases and unstructured data in social media and images. Some data are called semistructured and have characteristics of both types. This course focuses on presentation of data in visual form for humans using current techniques such as Tableau and Qlik.

IS 465 - Text Mining

(3.00 cr.) *Prerequisite: CS 485 or IS 353; IS 358; or written permission of the department chair.* Students are introduced to mining textual data to discover information and knowledge embedded in formats such as social media and electronic text documents. Students utilize technologies such as SAS Enterprise Miner™ to perform text mining using methods such as clustering, regression, and decision trees. Students develop a project using current business intelligence technology for text mining.

IS 499 - Internship in Information Systems

(1-3.00 cr.) *Prerequisite: IS 352, IS 353, IS 358, IS 453; or written permission of the instructor. IS 352, IS 353, or IS 453 may be taken concurrently. Restricted to seniors.* Students participate in individual study and group preparation and reflection while working in a technology-related position for an enterprise. Students work with an executive or information systems professional, performing duties that are matched with Loyola coursework. Each internship is constructed by an information systems professor in conjunction with the on-site internship supervisor. Students work with the professor before engagement and at the end of the term.

Law and Social Responsibility/Business Law Course Descriptions

LW 305 - Legal Environment of Business

(3.00 cr.) *Prerequisite: 60 credits.* Examines the legal environment of business activity. Students learn to explain basic legal terms; articulate legal rights and requirements in the managerial setting; identify how a particular legal issue fits into the legal system and how law develops and changes; and discuss managing an organization's legal matters, including ethical use of the law. Topics include classifications and sources of law, dispute resolution, agency, business associations, corporate governance, contracts, torts, product liability, securities, equal employment opportunity; and intellectual property.

Operations Management Course Descriptions

OM 260 – Introductions to Supply Chain Management

(3.00 cr.) Operations management develops the processes by which organizations create value. Students develop an overview of the planning and operation of systems to convert resources to goods and services. Topics include operations strategy, design of processes, product and process quality, global competition and supply chain issues, productivity of operating systems, impact on societal and physical environment, and both qualitative and quantitative methods to improve decision making.

Management Course Descriptions

MG 201 – Management Principles

(3.00 cr.) Develops knowledge and skills in the management of organizational behavior. Topics include wealth creation, personality, motivation, leadership, planning, teamwork, ethics, and employee development. Teaching methods may include lectures, cases, team decisions, and discussion. Testing methods may include exams, papers, and team projects.

Marketing Course Descriptions

MK 240 – Marketing Principles

(3.00 cr.) Students acquire an understanding of marketing's role in helping an organization create value. Students learn to identify the elements of the marketing mix, recognize how these elements can be integrated to achieve organizational objectives, and describe a product's marketing plan. Topics include market research, consumer behavior, market segmentation, targeting, positioning, and the marketing mix-product, promotion, pricing, and distribution.

LOYOLA
UNIVERSITY MARYLAND

Program Requirements – Information Systems & Data Analytics BBA

Information Systems & Data Analytics BBA	
Loyola Core Courses	***Semester Credit Hours***
1. WR 100 Effective Writing	3.0
2. History 100 Level	3.0
3. EN 101 Understanding Literature	3.0
4. English 200 Level Major Writers *or* History 300 Level	3.0
5. Foreign Language Intermediate II Level (104 level)	3.0
6. EC 102 Microeconomic Principles	3.0
7. EC 103 Macroeconomic Principles	3.0
8. Fine Arts (AH110, AH111, DR250, DR251, DR252, MU201, MU203, MU204, PT270, or SA224)	3.0
9. MA 151/251 Calculus	3.0
10. Natural Science	3.0
11. EC 220 Business Statistics	3.0
12. PL 201 Foundations of Philosophy	3.0
13. TH 201 Introduction to Theology	3.0
14. Theology 202 – 299 *or* PL 200 Level Philosophical Perspectives	3.0
15. Ethics: choose from PL 301 – 319 or TH 301 – 319	3.0
Diversity Core Requirement	Students must complete the diversity requirement through a designated diversity core, major, or elective course.
Major - Business Foundation Courses	***Semester Credit Hours***
16. AC 201 Financial Accounting	3.0
17. AC 202 Managerial Accounting	3.0
18. IS 251 Data Analytics & Information Systems	3.0
19. MG 201 Management Principles	3.0
20. MK 240 Marketing Principles	3.0
21. LW 305 Legal Environment of Business	3.0
22. FI 320 Financial Management	3.0
23. OM 260 Introduction to Supply Chain Management	3.0

Information Systems & Data Analytics BBA	
Major - Advanced Courses	***Semester Credit Hours***
24. IS 352 Introduction to Programming in Python	3.0
25. IS 353 Data Management and Database Systems	3.0
26. IS 355 Cyber Security and Networks	3.0
27. IS 358 Business Intelligence and Data Mining	3.0
28. IS 453 Information Systems Analysis and Design	3.0
29. One Elective from Computer Science, Mathematics, Business, Communication, or Engineering	3.0
30. IS 458 Web-Enabled Applications	3.0
Electives	***Semester Credit Hours***
31. Non-Departmental Elective	3.0
32. Non-Departmental Elective	3.0
33. Non-Departmental Elective	3.0
34. Free Elective	3.0
35. Free Elective	3.0
36. Free Elective	3.0
37. Free Elective	3.0
38. Free Elective	3.0
39. Free Elective	3.0
40. Free Elective	3.0
Total Credits:	***120.0***

Attachment: General Business Learning Aims, Institutional Alignment and Assessment Map

General Business Learning Outcome	**Loyola Undergraduate Learning Aim**	**Assessment Course**
Students will develop oral and writing skills to communicate effectively in a business environment.	*Eloquentia Perfecta*	IS 251
Students will provide concise and engaging details for and persuasive development of business documents.	*Eloquentia Perfecta*	ALBA (Assurance of Learning Exam)
Students will be able to write with clarity and language maturity.	*Eloquentia Perfecta*	IS 251
Students will use appropriate technologies to enhance their oral and written presentations.	Critical Understanding	IS 251
Students will develop analytical, critical thinking and reflective skills to improve decision- making in an uncertain and rapidly changing environment.	Critical Understanding	OM 330
Students will demonstrate the ability to make decisions based on statistical analyses, data management and data analytics using current and emerging technologies.	Critical Understanding	EC 220, OM 330
Students will develop the ability to adapt to current and emerging technologies, analyze unstructured problems and utilize technologies to develop problem solutions.	Critical Understanding	IS 251
Students will develop knowledge of the functional areas of business and develop an appreciation for integration across those areas.	Intellectual Excellence	MK 240, OM 330, MG 201, FI 320, AC 201
Students will demonstrate knowledge of the various functional areas of business.	Intellectual Excellence	ALBA
Students will be able to integrate knowledge pertaining to the functional areas of business as a means to formulate and implement decisions intended to achieve organizational goals.	Intellectual Excellence	ALBA
Students will develop an appreciation of ethical reasoning and a commitment to justice.	Promotion of Justice	LW 305
Students will demonstrate the ability to recognize ethical dilemmas, and to incorporate ethical reasoning and a commitment to justice in decision making.	Promotion of Justice	LW 305
Students will appreciate the multiple dimensions of business in a global context.	Diversity	ALBA
Students will develop an understanding of the global environment of business.	Intellectual Excellence	EC 102, IS 251, LW 305
Students will be able to articulate the benefits of Diversity, Equity & Inclusion (DEI) in the workplace and society.	Diversity	ALBA
Students will be able to identify structural and institutional barriers to DEI and identify ways that businesses can alleviate them.	Diversity	ALBA