

GRADUATE DEGREE PROGRAMS



Bay Atlantic University offers the following graduate degree programs:

Master of Business Administration

Master of Science in

- Artificial Intelligence Engineering
- Big Data Analytics
- Cloud Computing Engineering
- Cybersecurity
- Data Science and Public Policy
- Software Engineering

Dual Master Program

- Big Data Analytics
- Master of Business Administration

**MASTER OF BUSINESS
ADMINISTRATION DEGREE PROGRAM**

Bay Atlantic University offers a Master of Business Administration (MBA) degree built to provide its students with the intellectual foundations, experience-driven knowledge, and problem-solving skills needed to succeed in a dynamic and global business world. The program is designed to produce ethical business leaders who can effectively manage real-world problems in an environment of teamwork and partnership.

The MBA program provides a high level of professional education, and the curriculum covers a broad range of subjects, qualifying students for diverse job opportunities.

The MBA degree is earned by completing the program course requirements of 36 credit hours (12 courses of three credit hours), of which 24 credits are core courses and 12 credits are concentration elective courses. To qualify for the MBA degree, students must meet all core and concentration elective credit requirements.

Bay Atlantic University's Master of Business Administration provides an opportunity for students to further their education by improving their professional management, leadership, and analytical skills, thus enhancing their career and earning potential. The program is intended to prepare career focused students with comprehensive knowledge of business principles.

Students are offered a comprehensive business education as they learn the key content areas of management, marketing, finance, accounting, economics, and law. The Master of Business Administration program provides high quality courses that are rigorous, transferable at the graduate level, and provided at a reasonable cost.

PROGRAM LEARNING OBJECTIVES

1. Employ advanced leadership and self-awareness to influence others.
2. Evaluate ethical issues and dilemmas faced by business leaders and managers.
3. Design decision-making processes using quantitative and qualitative data.
4. Develop a global perspective and an awareness of the cultural and social nuances that impact business around the globe.
5. Evaluate concepts from functional disciplines to identify and develop business strategies.
6. Incorporate diversity, international, and multicultural perspectives in the decision-making process.

MBA COURSE LISTING

Core Requirements: 24 Credits (Students must complete all eight courses)

Course Code	Course Name	Pre-requisites	Credit
ACCT 507	Managerial Accounting		3
STAT 510	Data, Models, and Decisions		3
BUSN 601	Entrepreneurship		3
CAPS 623	Internship	All Cores	3
ECON 505	Economics		3
FINC 509	Financial Management		3
	Leadership and		3
MGMT 502	Organizational Behavior		3
MKTG 512	Marketing Management		3

Electives: 12 Credits (students must complete four courses)

Course Code	Course Name	Pre-requisites	Credit
BUSN 616	New Product Management	MKTG512	3
BUSN 641	Survey of Innovations around the World		3
BUSN 642	Corporate and National Trade and Investment Security Issues		3
BUSN 644	International Patents		3
BUSN 645	Regional Trade Issues		3
BUSN 646	Competition Policy Across Nations		3
BUSN 647	Emerging Markets		3
BUSN 654	Globalization and Business Strategy		3

BUSN 655	Conflict Analysis, Mediation and Negotiation		3
BUSN 659	Risk Assessment in Conflict Regions		3
CAPS 501	Research Methods		3
ECON 580	Human Resource Economics for Business	ECON505	3
ECON 605	Quantitative Methods in Business and Economics		3
ECON 655	Economics of International Development		3
ECON 656	Geographic Information Science (GIS)		3
ECON 657	International Economics	ECON505	3
ECON 665	U.S. Economic & Trade Policy		3
ECON 670	Urban Economics, Finance, and Governance		3
FINC 573	Money and Banking	ECON505	3
FINC 621	Financial Investment Strategies	ECON505	3
FINC 647	International Financial Institutions		3
FINC 649	Global Financial Markets		3
FINC 660	Global Financial Ethics		3
MGMT 532	Strategic Management		3
MGMT 533	Blockchain Technology and Business Management		3
MGMT 610	Advertising Management		3
MGMT 611	The Entrepreneurial Manager		3
MGMT 612	Non-Profit Management		3
MGMT 614	Managing Innovation		3
MGMT 615	Intrapreneurship		3
MKTG 615	Marketing Analytics		3
MKTG 618	Digital Marketing, Social Media & E-Commerce		3
MKTG 622	Pricing	MKTG512	3
MKTG 641	Brand Management		3
POLS 610	Global Affairs and Foreign Policy		3
POLS 642	International Trade		3
POLS 643	World Energy Politics		3
POLS 645	Transnational Security		3
POLS 647	International Law		3
POLS 651	Policy Formulation and Implementation		3
POLS 652	Gender, Development and Globalization		3
POLS 659	International Courts, Tribunals, Commercial Arbitrations, and the WTO		3

MASTER OF SCIENCE DEGREE PROGRAMS

BAU offers the following Master of Science programs:

- Artificial Intelligence Engineering
- Big Data Analytics
- Cloud Computing Engineering
- Cybersecurity
- Data Science and Public Policy
- Software Engineering

The MS degrees are earned by completing the indicated number of credit hours of coursework, including core and elective courses (see specific programs for requirements). Students enrolled in the graduate program must maintain a Cumulative Grade Point Average (CGPA) of at least 3.0 (B) out of 4.0 and earn a minimum grade of not less than 2.7 (B-) out of 4.0 on all courses to qualify to graduate.

MASTER OF SCIENCE IN ARTIFICIAL INTELLIGENCE ENGINEERING PROGRAM

Program requirement: 36 credits (21 core credits and 15 elective credits).

Artificial Intelligence Engineering is a fast-growing field in the STEM industry essential to create more robust, high-performance digital elements. The program is designed to prepare students with advanced knowledge and skills in artificial intelligence, machine learning, and deep learning in the engineering domain. The AI program consists of core courses training students to become highly skilled AI engineers who can develop and apply AI-based solutions within the engineering discipline. The program also prepares students to become leaders in applying AI and Machine Learning to their fields of expertise. This STEM program focuses on various AI engineering frameworks and representations for inventing, tuning, and specializing AI structures and algorithms. The topics of engineering include various AI aspects such as pattern recognition, machine learning, deep learning, natural language processing, computer vision, etc., fundamental to building systems that can intelligently interact with humans and other digital processes. The program will prepare students for career positions such as AI Engineer, Machine Learning Engineer, Analytics Research Scientist, Data Scientist Engineer, etc. The market for the workforce in the industry, commercially and academically, is continually growing worldwide, which places our graduates in very high demand. BAU is in one of the largest areas for a collection of technology companies, which graduates will tremendously benefit from while they pursue their degrees for experiences and after graduation for job opportunities.

PROGRAM LEARNING OBJECTIVES

1. Understand the scientific theories and methodologies of AI and Machine Learning trends used in designing and implementing AI-based processes and products.
2. Apply the foundation and models of machine learning and deep learning to create AI solutions that can overcome digital challenges in various domains.
3. Utilize various AI and Machine Learning tools for analyzing, inventing, and tuning AI Algorithms for new and existing digital products.
4. Develop reliable and scalable AI-based applications using the latest methods and technologies to ensure usability, availability, integrity, and security.
5. Communicate effectively orally and in writing with technical and non-technical stakeholders regarding computing solutions, project management, and ethical considerations to information systems decisions.
6. Assess technical skills and knowledge to pursue various professional technology certifications globally recognizable in the industry, such as Certified Artificial Intelligence Engineer (CAIE™), AIE™ Certification, etc.
7. Understand the role of responsible citizenship in the legitimate use of technology and digital data.

MINIMUM HARDWARE REQUIREMENTS

Students must have a computer system that meets the following general requirements: (Most computers are equipped with these components.)

- Memory/RAM (8 GB or Higher)
- Video Card
- Sound Card
- Speakers and Microphone
- Headphones (not required but recommended)
- Webcam
- USB Ports
- Network Card (10/100/1000 Mbps Ethernet)
- Wireless Network Card (2.4 and 5.0 GHz)

- Operating Systems:
 - Windows 10 64-bit or Later
 - Mac OS Catalina or Later

MASTER OF SCIENCE IN ARTIFICIAL INTELLIGENCE ENGINEERING COURSE LISTING

Core requirements: 21 credits (7 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 511	Big Data Analytics	CMPS 514	3
BGDA 513	Artificial Intelligence Fundamental of Deep	BGDA 511	3
BGDA 515	Learning	BGDA 511	3
CAPS 623	Internship Management Information	All Cores	3
CMPS 514	Systems		3
CMPS 516	Models and Algorithms in AI Engineering	BGDA 511	3
		BDGA 522 or CMPS	
CMPS 530	Machine Learning and Pattern Recognition	516	

Electives: 15 credits (students must choose 5 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 510	Data Mining	CMPS 514	3
CMPS 515	Network Security & Cryptography	CMPS 514	3
CMPS 520	Database Design Concepts		3
CMPS 524	Computer Networks and Mobile Communications	CMPS 514	3
CMPS 525	Cloud Computing and Infrastructure		3
CMPS 560	Object-Oriented Software Development		3
CMPS 565	Cloud Data Storage Management		3
CMPS 570	Software Design and Architecture	CMPS 564	3
CMPS 610	Natural Language Processing	CMPS 516	3
CMPS 612	Image Processing and Computer Visualization	CMPS 516	3

MASTER OF SCIENCE IN BIG DATA ANALYTICS PROGRAM

Program requirement: 36 credits (21 core credits and 15 elective credits).

The program is designed to meet the increasing need for highly skilled data analysts who can analyze the growing amount of data confronting a variety of disciplines and transform the data into usable information for use in decision-making. To meet that objective, the program expects students to play a greater role in decision-making and strategy setting for their current or future organizations. Frameworks are used to critically look at, interpret and visualize data in order to apply that knowledge in real-world applications that will shape how 21st century business challenges are addressed.

The program will prepare students for job positions such as data analyst, database administrator, database developer, data modeler, data scientist, business intelligence analyst, database manager, data warehouse manager, data architect, big data engineer, data scientist.

PROGRAM LEARNING OBJECTIVES

1. Understand the theories and methodologies of data science applied to Big Data and Data Mining, including principles, frameworks, and models for transferring, transforming, analyzing, and interpreting data.
2. Convert a data analytic problem and related information into a proper mathematical, statistical representation, and usable contexts by using appropriate methodologies for transferring, transforming, and analyzing based on attributes of the available datasets.
3. Apply advanced and intelligent computer algorithms to produce a reliable data model and system for implementing automatic data collection and analysis using computer-programming languages for data sciences, such as Python, R, etc.

4. Demonstrate effectiveness and efficiency of operating and executing computer command-line interfaces and software applications for data organization, manipulation, and presentation, including implementations of security measures and ethical practices for collecting and storing data.
5. Communicate effectively orally and in writing with technical and non-technical stakeholders, including data collection process and summarization of results in the descriptive, numerical, and visual forms.
6. Appraise knowledge, skills, and abilities in information technology and data science of big data analytics applying to research and project beneficial to organizations, such as federal or national governments, state and local governments, nonprofits, and industries, in protecting digital resources and infrastructures.
7. Assess technical skills and knowledge to pursue various professional technology certifications globally recognizable in the industry, such as Dell Associate - Data Science Version 2.0 Certification, Dell Specialist - Data Scientist, Advanced Analytics Version 1.0 Certification, etc.
8. Understand the role of responsible citizenship in the legitimate use of technology and digital data

MINIMUM HARDWARE REQUIREMENTS

Students must have a computer system that meets the following general requirements: (Most computers are equipped with these components.)

Memory/RAM (8 GB or Higher)

- Video Card
 - Sound Card
 - Speakers and Microphone
 - Headphones (not required but recommended)
 - Webcam
 - USB Ports
 - Network Card (10/100/1000 Mbps Ethernet)
 - Wireless Network Card (2.4 and 5.0 GHz)
 - Operating Systems:
 - Windows 10 64-bit or Later
 - Mac OS Catalina or Later
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BIG DATA ANALYTICS COURSE LISTING

Core requirements: 21 credits (7 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 501	Introduction to Big Data		3
BGDA 510	Data Mining	CMPS 514	3
BGDA 511	Big Data Analytics	CMPS 514	3
BGDA 522	Applied Statistics		3
BGDA 555	Business Intelligence	BGDA 522	3
CAPS 623	Internship	All Cores	3
	Management Information Systems		3
CMPS 514			

Electives: 15 credits (students must choose 5 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 513	Artificial Intelligence	BGDA 511	3
BGDA 521	Technology Management		3
	Big Data and Hadoop		3
BGDA 550	Environment	BGDA 511	3
	Big Data Analytics and		3
BGDA 552	Cloud Computing	BGDA 511	3
	Network Security &		3
CMPS 515	Cryptography	CMPS 514	3
CMPS 517	Computer Forensics	CMPS 514	3
	Database Design		3
CMPS 520	Concepts		3
	Computer Networks and		3
CMPS 524	Mobile Communications	CMPS 514	3
	Cloud Computing and		3
CMPS 525	Infrastructure		3
	Machine Learning and	BDGA 522 or CMPS 516	3
CMPS 530	Pattern Recognition		3
	Information Security		3
CMPS 564	Management	CMPS 515	3
MKTG 615	Marketing Analytics	BGDA 555	3

MASTER OF SCIENCE IN CLOUD COMPUTING ENGINEERING PROGRAM

Program requirement: 36 credits (21 core credits and 15 elective credits).

The program is designed to prepare students to become highly skilled in implementing and managing cloud computing technology. This STEM program focuses on engineering aspects of the cloud environment and infrastructure, including requirement analysis, design, implementation, testing, and maintenance to ensure the digital infrastructure and resources' usability, operation, and security. The engineering topics cover cloud architectures of systems and applications running on the cloud, business processes, security management, data analytics, etc., from small-scale to enterprise level to ensure the effectiveness and efficiency of the cloud technology and services. The program will prepare students for career positions such as cloud engineer, cloud architect, cloud analyst, cloud administrator, cloud developer, software engineer, network architect, etc. The market for the workforce in the industry, commercially and academically, is continually growing worldwide, which places our graduates in very high demand. BAU is in one of the largest areas for a collection of technology and cloud provider companies, which graduates will tremendously benefit from while they pursue their degrees for experiences and after graduation for job opportunities.

PROGRAM LEARNING OBJECTIVES

1. Understand the theories, methodologies, and trends used in cloud computing and on-premises infrastructure.
2. Apply the foundation and principle of cloud engineering to create cloud solutions that can overcome digital challenges.
3. Utilize advanced digital tools for managing, designing, implementing, analyzing, migrating, and enhancing digital and business processes in various domains and industries.

4. Integrate new and advanced technological disciplines into cloud development, such as artificial intelligence, data mining, machine learning, the Internet of Things (IoT), etc., to leverage cloud computing processes and extend an organizational IT environment.
5. Implement reliable and cost-effective cloud infrastructure and data storage to ensure usability, availability, integrity, and security using multiple technologies.
6. Communicate effectively orally and in writing with technical and non-technical stakeholders regarding computing solutions, project management, and ethical considerations to information systems decisions.
7. Assess technical skills and knowledge to pursue various professional technology certifications globally recognizable in the industry, such as AWS Certified Cloud Practitioner, Google Cloud Certification, etc.
8. Understand the role of responsible citizenship in the legitimate use of technology and digital data.

MINIMUM HARDWARE REQUIREMENTS

Students must have a computer system that meets the following general requirements: (Most computers are equipped with these components.)

- Memory/RAM (8 GB or Higher)
- Video Card
- Sound Card
- Speakers and Microphone
- Headphones (not required but recommended)
- Webcam
- USB Ports
- Network Card (10/100/1000 Mbps Ethernet)
- Wireless Network Card (2.4 and 5.0 GHz)
- Operating Systems:
 - Windows 10 64-bit or Later
 - Mac OS Catalina or Later

CLOUD COMPUTING ENGINEERING COURSE LISTING

Core requirements: 21 credits (7 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 511	Big Data Analytics	CMPS 514	3
CAPS 623	Internship	All Cores	3
CMPS 514	Management Information Systems		3
CMPS 525	Cloud Computing and Infrastructure		3
CMPS 565	Cloud Data Storage Management		3
CMPS 625	Cloud Security	CMPS 525	3
CMPS 640	Cloud System Administrator and Architect	CMPS 525	3

Electives: 15 credits (students must choose 5 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 510	Data Mining	CMPS 514	3
BGDA 513	Artificial Intelligence	BGDA 511	3
BGDA 521	Business Intelligence		3
BGDA 552	Big Data Analytics and Cloud Computing	CMPS 511	
CMPS 515	Network Security & Cryptography	CMPS 514	3
CMPS 520	Database Design Concepts		3
CMPS 524	Computer Networks and Mobile Communications	CMPS 514	3
CMPS 530	Machine Learning and Pattern Recognition	BDGA 522 or CMPS 516	3
CMPS 564	Information Security Management	CMPS 515	3
CMPS 570	Software Design and Architecture	CMPS 564	3
CMPS 627	Wireless Sensor Network	CMPS 524	3

MASTER OF SCIENCE IN CYBERSECURITY PROGRAM

Program requirement: 36 credits (21 core credits and 15 elective credits).

Focused on preparing professionals for the growing field of information systems, this graduate program teaches students how to protect the confidentiality, availability, and integrity of information and information systems that support modern organizations. The program focuses on both the fundamentals of information systems as well as exposing students to advanced topics in areas such as network security, cryptography, risk management, security governance, business continuity, security architecture, physical security and critical infrastructures.

PROGRAM LEARNING OBJECTIVES

1. Define privacy, legal and ethical concerns of information security potentially lead to technological vulnerabilities critical to an organization's digital data and resources.
2. Understand the computer network engineering and security principles mandatory for software and hardware components, including wireless/non-wireless technologies and cryptography methods.
3. Apply data collection and analysis principles in information systems and security controls for technological decision-making and problem-solving to ensure sufficient operation and protection of confidentiality, integrity, and availability regarding digital infrastructure.
4. Communicate effectively orally and in writing with technical and non-technical stakeholders regarding information security concerns and solutions, including developing reliable incident response plans and execution for a cyber-incident.
5. Assess technical skills and knowledge to pursue various professional technology certifications globally recognizable in the industry, such as CompTIA - Security+, ISC CISSP, ISACA CISM CompTIA - PenTest+, etc

6. Appraise knowledge, skills, and abilities in information technology and management in cybersecurity applying to research and project beneficial to organizations, such as federal governments, state and local governments, nonprofits, and industries, in protecting digital resources and infrastructures
7. Understand the role of responsible citizenship in the legitimate use of technology and digital data.

MINIMUM HARDWARE REQUIREMENTS

Students must have a computer system that meets the following general requirements: (Most computers are equipped with these components.)

- Memory/RAM (8 GB or Higher)
- Video Card
- Sound Card
- Speakers and Microphone
- Headphones (not required but recommended)
- Webcam
- USB Ports
- Network Card (10/100/1000 Mbps Ethernet)
- Wireless Network Card (2.4 and 5.0 GHz)
- Operating Systems:
 - Windows 10 64-bit or Later
 - Mac OS Catalina or Later

CYBERSECURITY COURSE LISTING

Core requirements: 21 credits (7 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 522	Applied Statistics		3
CAPS 623	Internship	All Cores	3
CMPS 502	Cyber Security		3
CMPS 514	Management Information Systems		3
CMPS 515	Network Security & Cryptography	CMPS 514	3
CMPS 564	Information Security		3
CMPS 578	Management Cyber Security Law	CMPS 515	3

Electives: 15 credits (students must choose 5 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 501	Introduction to Big Data		3
BGDA 510	Data Mining	CMPS 514	3
BGDA 511	Big Data Analytics	CMPS 514	3
BGDA 513	Artificial Intelligence	BGDA 511	3
BGDA 521	Technology Management		3
CMPS 517	Computer Forensics	CMPS 514	3
CMPS 520	Database Design Concepts		3
CMPS 524	Computer Networks and Mobile Communications	CMPS 514	3
CMPS 525	Cloud Computing and Infrastructure		3
CMPS 530	Machine Learning and Pattern Recognition	BDGA 522 or CMPS 516	3
CMPS 618	Penetration Testing	CMPS 564	3
CMPS 623	Web Application Security	CMPS 564	3
CMPS 625	Cloud Security	CMPS 525	3
CMPS 627	Wireless Sensor Network	CMPS 524	3

MASTER OF SCIENCE IN DATA SCIENCE AND PUBLIC POLICY PROGRAM

Program requirement: 38 credits (32 core credits and 6 elective credits).

The use of data in formulating policies for both public and private sector organizations has always been essential in decision making processes. In recent decades, data analytics has played an ever more central role in addressing the increasingly complex issues affecting all societies. For better governance, maximizing the utility of limited resources, and ensuring that policies are having the intended effect, the merging of data science with public policy awareness has been an important innovation in the formulation of effective public policy. The use of analytics and big data are reshaping the way policymakers see the world and how they make the difficult decisions which impact society. As such, both public and private sector employers are looking for trained individuals who can conduct sophisticated analyses, draw meaningful conclusions, and present actionable findings so that leaders and policymakers can make data driven decisions. The Data Science and Public Policy Program offers students a combination of classes in the fields of data sciences and public policy where students learn the technical skills of data analytics along with courses necessary to understand how policy is formulated. In this STEM program core courses included statistics, database design concepts, data modelling, policy formulation, public management, and decision making. The program will prepare students for careers at the intersection of data science and public policy. BAU is located in the heart of one of the most significant policy centers in the world, which program students will benefit from while they pursue their degrees, and after graduation as they seek for job opportunities. These high demand jobs can be found in the public sector working in government agencies, in the private sector working for lobbying, management consulting and risk management companies, and in the non-profit sector working for NGOs in many different policy areas. The market for the

workforce in both the public and private sectors is continually growing worldwide, which places our graduates in very high demand.

PROGRAM LEARNING OBJECTIVES

1. Contribute to a greater understanding of how the use of data can drive policy making decisions.
2. Process data in various formats for analysis in the areas of public policy and governance.
3. Restructure data from different platforms into usable contexts.
4. Generate results of data analysis in written, oral, and visual forms.
5. Select the appropriate methods and tools for data analysis in the areas of public policy and governance.
6. Leverage data science to improve efficiency of government services and increase government transparency and accountability.
7. Develop an understanding of how public sector work impacts the lives of citizens on a regular basis.
8. Advocate for efficiencies in the delivery of government services for the widest possible benefit of the public.

MINIMUM HARDWARE REQUIREMENTS

Students must have a computer system that meets the following general requirements: (Most computers are equipped with these components.)

- Memory/RAM (8 GB or Higher)
- Video Card
- Sound Card
- Speakers and Microphone
- Headphones (not required but recommended)
- Webcam
- USB Ports
- Network Card (10/100/1000 Mbps Ethernet)
- Wireless Network Card (2.4 and 5.0 GHz)
- Operating Systems:
 - Windows 10 64-bit or Later

- Mac OS Catalina or Later

DATA SCIENCE AND PUBLIC POLICY COURSE LISTING

Core requirements: 32 credits (11 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 522	Applied Statistics		3
	Fundamentals of Data		
CMPS 501	Science		3
	Database Design		
CMPS 520	Concepts		3
CMPS 521	Data Visualization	BGDA 522	3
CMPS 615	Advanced Data Modeling	CMPS 521	3
	Data, Models and		3
STAT 510	Decisions		
POLS 615	Public Management		3
	Public Policy Research		2
POLS 620	Project		
	Policy Formulation and		3
POLS 651	Implementation		
ECON 505	Economics		3
CAPS 501	Research Methods		3

Electives: 6 credits (students must choose 2 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 501	Introduction to Big Data		3
BGDA 555	Business Intelligence	BGDA 522	3
POLS 630	Strategic Planning		3

MASTER OF SCIENCE IN SOFTWARE ENGINEERING PROGRAM

Program requirement: 36 credits (21 core credits and 15 elective credits).

The program is designed to prepare students to become highly skilled leaders in software engineering who can produce computing solutions for various scales of software development projects. The SWE program focuses on all aspects of the Software Development Life Cycle (SDLC), including requirement analysis, design, implementation, testing, and maintenance to ensure the software and system applications' usability, operation, and security. The engineering process covers all types of software, such as standalone applications, web applications, mobile applications, etc., from small-scale software to enterprise level to ensure the effectiveness and efficiency of digital products. The market for the workforce in the industry, commercially and academically, is continually growing worldwide, which places our graduates in very high demand. BAU is in one of the largest areas for a collection of technology and software companies, which graduates will tremendously benefit from while they pursue their degrees for experiences and after graduation for job opportunities. This major will prepare students for job positions such as Software Engineer, Front-End Engineer, Back-End Engineer, Full-Stack Engineer, DevOps Engineer, Software Developer, Mobile Application Developer, Analyst/Programmer, Web Developer, Software Testers, including managerial and executive positions (e.g., engineering lead, director of engineering, chief technology officer, etc.).

PROGRAM LEARNING OBJECTIVES

1. Categorize the theories and methodologies used in software engineering and architecture in various Software Development Life Cycle (SDLC) models.
2. Utilize advanced tools for managing, designing, implementing, analyzing, and

enhancing software solutions for various domains and industries.

3. Combine programmatic and computing approaches of the principles of software engineering and SDLC to solve real-world problems.
4. Adapt new and advanced technological disciplines into software development, such as artificial intelligence, data mining, machine learning, the Internet of Things (IoT), etc.
5. Build reliable and cost-effective software applications to ensure usability, availability, integrity, and security using multiple technologies, including database management systems, network and communication protocols, cloud computing, software frameworks, etc.
6. Perform leadership roles in software development projects to oversee verbal, written, and technical communications with stakeholders regarding computing solutions, project management, and ethical considerations to information systems decisions.
7. Appraise technical skills and knowledge to pursue various professional technology certifications globally recognizable in the industry, such as CSSLP – Certified Secure Software Lifecycle Professional, IEEE Professional Software Developer Certification, Oracle Database SQL Certified Associate Certification, Java Certified Foundations Associate, Project Management Professional (PMP) Certification, etc.
8. Justify the role of responsible citizenship in the legitimate use of technology and digital data.

MINIMUM HARDWARE REQUIREMENTS

Students must have a computer system that meets the following general requirements: (Most computers are equipped with these components.)

- Memory/RAM (8 GB or Higher)
 - Video Card
 - Sound Card
 - Speakers and Microphone
-

- Headphones (not required but recommended)
- Webcam
- USB Ports
- Network Card (10/100/1000 Mbps Ethernet)
- Wireless Network Card (2.4 and 5.0 GHz)
- Operating Systems:
 - Windows 10 64-bit or Later
 - Mac OS Catalina or Later

SOFTWARE ENGINEERING COURSE LISTING

Core requirements: 21 credits (7 courses)

Course Code	Course Name	Pre-requisites	Credit
CAPS 623	Internship	All Cores	3
CMPS 510	Principles and Concepts of Software Engineering		3
CMPS 560	Object-Oriented Software Development		3
CMPS 570	Software Design and Architecture		3
CMPS 580	Development of Graphical User Interface		3
CMPS 620	Software Project Management	CMPS 570	3
CMPS 635	Software Testing and Quality Assurance	CMPS 510 & CMPS 560	3

Electives: 15 credits (students must choose 5 courses)

Course Code	Course Name	Pre-requisites	Credit
BGDA 501	Introduction to Big Data		3
BGDA 510	Data Mining	CMPS 514	3
BGDA 522	Applied Statistics		3
BGDA 511	Big Data Analytics	CMPS 514	3
BGDA 513	Artificial Intelligence	BGDA 511	3
BGDA 521	Technology Management		3
CMPS 514	Information Systems Management		3
CMPS 515	Network Security & Cryptography	CMPS 514	3
CMPS 520	Database Design Concepts		3

	Computer Networks and Mobile Communications	CMPS 514	3
CMPS 525	Cloud Computing and Infrastructure		3
CMPS 565	Cloud Data Storage Management		3
CMPS 530	Machine Learning and Pattern Recognition	BDGA 522 or CMPS 516	3
CMPS 564	Information Security Management	CMPS 515	3
CMPS 618	Penetration Testing	CMPS 564	3
CMPS 623	Web Application Security	CMPS 564	3
CMPS 627	Wireless Sensor Network	CMPS 524	3

DUAL MASTER PATHWAY

BAU offers the following Dual Master Pathway:

- MSc Big Data Analytics
- Master of Business Administration

The Dual Master Program is a three-year intensive pathway to earn both a Master of Science Degree in Big Data Analytics and a Master of Business Administration. The dual master degrees are earned by completing 72 credit hours of coursework, of which 48 credit hours are core courses, 15 credit hours are electives, leaving nine credits, which are counted for both programs from the core courses. Because of the intensive nature of this program, students are admitted as a cohort in the fall and spring (no summer starts) and must follow the program plan to be successful. Students enrolled in the graduate program must maintain a Cumulative Grade Point Average (CGPA) of at least 3.0 (B) out of 4.0 and earn a minimum grade of not less than 2.7 (B-) out of 4.0 on all courses to qualify to graduate.

MASTER OF SCIENCE IN BIG DATA ANALYTICS

The program is designed to meet the increasing need for highly skilled data analysts who can analyze the growing amount of data confronting a variety of disciplines and transform the data into usable information for use in decision-making. To meet that objective, the program expects students to play a greater role in decision-making and strategy setting for their current or future organizations. Frameworks are used to critically look at, interpret and visualize data to apply that knowledge in real-world applications that will shape how 21st century business challenges are addressed.

The program will prepare students for job positions such as data analyst, database administrator, database developer, data modeler, data scientist, business intelligence analyst, database manager, data warehouse manager, data architect, big data engineer, data scientist.

Program Learning Objectives

1. Understand the theories and methodologies of data science applied to Big Data and Data Mining, including principles, frameworks, and models for transferring, transforming, analyzing, and interpreting data.
2. Convert a data analytic problem and related information into a proper mathematical, statistical representation, and usable contexts by using appropriate methodologies for transferring, transforming, and analyzing based on attributes of the available datasets.
3. Apply advanced and intelligent computer algorithms to produce a reliable data model and system for implementing automatic data collection and analysis using computer-programming languages for data sciences, such as Python, R, etc.
4. Demonstrate effectiveness and efficiency of operating and executing computer command-line interfaces and software applications for data organization, manipulation, and presentation, including implementations of security measures and ethical practices for collecting and storing data.
5. Communicate effectively orally and in writing with technical and non-technical stakeholders, including data collection process and summarization of results in the descriptive, numerical, and visual forms.
6. Appraise knowledge, skills, and abilities in information technology and data science of big data analytics applying to research and project beneficial to organizations, such as federal or national governments, state and local governments, nonprofits, and industries, in protecting digital resources and infrastructures.
7. Assess technical skills and knowledge to pursue various professional technology certifications globally recognizable in the industry, such as Dell Associate - Data Science Version 2.0 Certification, Dell Specialist - Data Scientist, Advanced Analytics Version 1.0 Certification, etc.
8. Understand the role of responsible citizenship in the legitimate use of technology and digital data

Minimum Hardware Requirements

Students must have a computer system that meets the following general requirements: (Most computers are equipped with these components.)

- Memory/RAM (8 GB or Higher)
- Video Card
- Sound Card
- Speakers and Microphone
- Headphones (not required but recommended)
- Webcam
- USB Ports
- Network Card (10/100/1000 Mbps Ethernet)
- Wireless Network Card (2.4 and 5.0 GHz)
- Operating Systems:
 - Windows 10 64-bit or Later
 - Mac OS Catalina or Later

MASTER OF BUSINESS ADMINISTRATION

The MBA program provides a high level of professional education, and the curriculum covers a broad range of subjects, qualifying students for diverse job opportunities.

Students are offered a comprehensive business education as they learn the key content areas of management, marketing, finance, accounting, economics, and law. The program also includes three major study emphases namely Entrepreneurship, Global Affairs and Economics and Finance.

Program Learning Objectives

1. Employ advanced leadership and self-awareness to influence others.
2. Evaluate ethical issues and dilemmas faced by business leaders and managers.
3. Design decision-making processes using quantitative and qualitative data.
4. Develop a global perspective and an awareness of the cultural and social nuances that impact business around the globe.
5. Evaluate concepts from functional disciplines to identify and develop business strategies.

6. Incorporate diversity, international, and multicultural perspectives in the decision-making process

Fall Start Course Listing

Core requirements: 48 credits (16 courses)

Course Code	Course Name	Pre-requisites	Credit
Fall 1			
BUSN 601	Entrepreneurship		3
BGDA 501	Introduction to Big Data		3
CMPS 514	Management Information Systems		3
Spring 1			
MKTG 512	Marketing Management		3
BGDA 511	Big Data and Analytics	CMPS 514	3
MGMT 502	Leadership & Organizational Behavior		3
Summer 1			
FINC 509	Financial Management		3
BGDA 522	Applied Statistic		3
Fall 2			
ACCT 507	Managerial Accounting		3
BGDA 555	Business Intelligence	BGDA 522	3
ECON 505	Economics		3
Spring 2			
STAT 510	Data, Models, and Decisions**		3
BGDA 510	Data Mining	CMPS 514	3
MKTG 615	Marketing Analytics**	BGDA 555	3
Summer 2			
	Elective*		3
	Elective*		3
Fall 3			
	Elective*		3
	Elective*		3
	Elective*		3
Spring 3			
CAPS 621	Capstone Project I**	All cores	3
CAPS 623	Internship	All Cores	3

*3 electives must be from Big Data

*2 electives must be from MBA

** course requirement for both degrees, and counted as two courses (9 credits)

Spring Start Course Listing

Core requirements: 48 credits (16 courses)

Course Code	Course Name	Pre-requisites	Credit
Spring 1			
CMPS 514	Management Information Systems		3
MGMT 502	Leadership & Organizational Behavior		3
MKTG 512	Marketing Management		3
Summer 1			
FINC 509	Financial Management		3
BGDA 522	Applied Statistic		3
Fall 1			
ACCT 507	Managerial Accounting		3
BUSN 601	Entrepreneurship		3
BGDA 501	Introduction to Big Data		3
Spring 2			
STAT 510	Data, Models, and Decisions**		3
BGDA 510	Data Mining	CMPS 514	3
BGDA 511	Big Data and Analytics	CMPS 514	3
Summer 2			
	Elective*		3
Fall 2			
	Elective*		3
BGDA 555	Business Intelligence	BGDA 522	3
ECON 505	Economics		3
Spring 3			
MKTG 615	Marketing Analytics**	BGDA 555	3
	Elective*		3
	Elective*		3
Summer 3			
	Elective*		3
Fall 3			
CAPS 621	Capstone Project I**	All cores	3
CAPS 623	Internship	All Cores	3

*3 electives must be from Big Data

*2 electives must be from MBA

** course requirement for both degrees, and counted as two courses (9 credits)

Electives: 15 credits (students must choose 5 courses, 3 from Big Data Analytics and 2 from MBA)

Course Code	Course Name	Pre-requisites	Credit
BGDA 513	Artificial Intelligence	BGDA 511	3
BGDA 521	Technology Management		3
	Big Data and Hadoop		3
BGDA 550	Environment	BGDA 511	3
	Big Data Analytics and		3
BGDA 552	Cloud Computing	BGDA 511	

	Network Security & Cryptography	CMPS 514	3
CMPS 515	Computer Forensics	CMPS 514	3
CMPS 517	Computer Networks and		3
CMPS 524	Mobile Communications	CMPS 514	
	Information Security		3
CMPS 564	Management	CMPS 515	
	New Product		
BUSN 616	Management	MKTG512	3
	Survey of Innovations		
BUSN 641	around the World		3
	Corporate and National		
	Trade and Investment		
BUSN 642	Security Issues		3
BUSN 644	International Patents		3
BUSN 645	Regional Trade Issues		3
	Competition Policy Across		
BUSN 646	Nations		3
BUSN 647	Emerging Markets		3
	Globalization and		
BUSN 654	Business Strategy		3
	Conflict Analysis,		3
	Mediation and		
BUSN 655	Negotiation		
	Risk Assessment in		3
BUSN 659	Conflict Regions		
	Quantitative Methods in		3
ECON 605	Business and Economics		
	Geographic Information		3
ECON 656	Science (GIS)		
	U.S. Economic & Trade		3
ECON 665	Policy		
	Urban Economics,		3
ECON 670	Finance, and Governance		
	International Financial		
FINC 647	Institutions		3
FINC 649	Global Financial Markets		3
FINC 660	Global Financial Ethics		3
MGMT 532	Strategic Management		3
	Blockchain Technology		
	and Business		
MGMT 533	Management		3
MGMT 610	Advertising Management		3
	The Entrepreneurial		
MGMT 611	Manager		3
MGMT 612	Non-Profit Management		3
MGMT 614	Managing Innovation		3
MGMT 615	Intrapreneurship		3
MKTG 615	Marketing Analytics		3
	Digital Marketing, Social		
MKTG 618	Media & E-Commerce		3
MKTG 622	Pricing	MKTG512	3
MKTG 641	Brand Management		3

COURSE DESCRIPTIONS



GRADUATE COURSE DESCRIPTIONS

ACCT 507: MANAGERIAL ACCOUNTING (3 CREDITS)

This course evaluates the profitability of a business using accounting analysis to address business problems. By using a problem-solving approach to achieve this goal, the course focuses not only on theory but on the practical application of accounting tools. The theoretical foundation of this class is that the art of business involves moving assets from lower-valued uses to higher-valued uses. Using this concept, the class develops students' ability to perform accounting analysis and to approach business problems from a management point of view.

BGDA 501: INTRODUCTION TO BIG DATA (3 CREDITS)

This course provides Big Data Concepts, Technology, and Architecture. The course delivers a comprehensive treatment of Big Data tools, terminology, and technology suitable to academic researchers and students. The course begins with an overview of Big Data and moves on to discuss every stage of the lifecycle of Big Data. Students will learn about the creation of structured, unstructured, and semi-structured data, data storage solutions, traditional database solutions such as SQL, data processing, data analytics, machine learning, and data mining. Students will also discover specific technologies, including Apache Hadoop, SQOOP, and Flume. This course also covers the central topic of big data visualization with Tableau and how to create various plots, such as scatter plots, histograms, bar, line, and pie charts with that software. Students will also learn the basics of R programming.

BGDA 510: DATA MINING (3 CREDITS) PREREQUISITE: CMPS 514

This course introduces data mining concepts. Basic concepts in data mining: frequent item set detection, association rules, clustering and classification are covered in depth.

BGDA 511: BIG DATA & ANALYTICS (3 CREDITS) PREREQUISITE: CMPS 514

Big data is a general term used to describe the tremendous amount of unstructured, semi-structured and textual data being created daily. Big data analytics is the process of examining large amounts of data with different types to discover hidden patterns, unknown correlations and potential

useful information. This is important for enterprises as it can provide competitive advantages over rivals and other business benefits, such as more effective marketing and increased revenue. In this course, the technologies associated with big data analytics including NoSQL databases, Hadoop and MapReduce will be covered. These technologies form the core of an open-source software framework that supports the processing of large data sets across clustered systems.

BGDA 513: ARTIFICIAL INTELLIGENCE (3 CREDITS) – PREREQUISITE: BGDA 511

The fundamentals and techniques of Artificial Intelligence are discussed in this course. The first part of the course begins with an overview of intelligent agents and agent architectures. We then introduce basic search techniques for problem solving and planning. Adversarial search and the principles of game theory are given. Knowledge representation and logical formalisms using propositional, and first order logic are explained. Planning in partial observable environments is introduced. In the second part, we first give a summary of probability theory and then explain probabilistic reasoning including Markov Decision process and Reinforcement Learning. Then some basic concepts of Machine Learning algorithms are discussed. Finally, we give examples of AI applications such as Robotics, Computer Vision and Natural Processing

BGDA 515: FUNDAMENTAL OF DEEP LEARNING (3 CREDITS) – PREREQUISITE: BGDA 511

This course covers the fundamental concepts of deep learning and its relationship to machine learning and artificial intelligence. Students will learn theories, principles, and practices of neural networks that enable deep learning applications to various domains, such as computer vision, natural language processing, text, images, videos, etc. Students will also gain practical experience in the use of deep learning algorithms, the exploration of deep learning programming frameworks, and the construction of neural networks.

BGDA 521: TECHNOLOGY MANAGEMENT (3 CREDITS)

This course is designed to lead the student to understand the importance and the nature of technological innovations, how they are integrated into business level strategies and how technological innovation process is managed. In this course, the aim is not only to understand the theories of technological innovations but also to discuss the

practice of technological innovation. Therefore, case studies are important; most of the theoretical parts are followed by case studies.

BGDA 522: APPLIED STATISTICS (3 CREDITS)

The course introduces fundamental topics in statistics and implements its applications to industrial, medical, financial, energy, and similar types of very large-size datasets to infer meaningful statistical results. The course is for graduate students with no significant background in this subject. Implementations will be performed on open-source statistical software. An introduction to R programming will be given.

BGDA 550: BIG DATA AND HADOOP ENVIRONMENT (3 CREDITS) – PREREQUISITE: BGDA 511

This course provides an overview of the fields of big data analytics and data science. Topics are covered in the context of data analytics, including the terminology and the core concepts behind big data problems, applications, and systems. In this course, students learn how to use Hadoop and related Big Data Processing tools that are used for scalable big data analysis and have made the data analysis processes and procedures more manageable and accessible.

BGDA 552: BIG DATA ANALYTICS AND CLOUD COMPUTING (3 CREDITS) – PREREQUISITE: BGDA 511

The course will cover topics in architecture, features, and benefits of Cloud Computing; Cloud Computing technologies such as Virtual Machines, SAAS, IAAS, Cloud Based Networks, Cloud Based Databases. Describe Cloud Computing solutions and identify parameters for managing and monitoring big data infrastructure. Scenarios using sample data will be conducted to develop skills using Cloud Computing Infrastructure.

BGDA 555: BUSINESS INTELLIGENCE (3 CREDITS) PREREQUISITE: BGDA 522

The content of this course is composed of introduction to business intelligence, database management systems, data warehouse models and architectures, data mining, preprocessing, driven methodology, guided algorithms and non-guided algorithms.

BUSN 601: ENTREPRENEURSHIP (3 CREDITS)

This course provides insight into the vital role played by entrepreneurs and entrepreneurship in today's global economy. Students will assess, explore,

critique, and celebrate the phenomenon of entrepreneurship. The course approaches entrepreneurship as an attitude and as a way that people think, act, and behave. It stresses how entrepreneurship is a workable process, applicable in almost any organizational setting, and it highlights how entrepreneurial behaviors can be sustained throughout the careers of individuals and the development of organizations and societies. The course focuses on new ventures, how they get started and what makes them successful. It encourages the generation of ideas and inquiry and supports student efforts to develop and support their ideas on these matters. Finally, it approaches entrepreneurship from both theoretical and practical viewpoints and draws from several academic disciplines, including sociology, psychology, and economics.

BUSN 616: NEW PRODUCT MANAGEMENT (3 CREDITS) – PREREQUISITE: MKTG 512

To remain competitive, firms must develop major innovations. Developing such innovations, however, is challenging. There has, however, recently been progress into determining how it may be possible to develop breakthroughs in a systematic fashion. Through cases and expert guest speakers, this course explores the new product management process starting with the idea generation, through product development finalizing in commercialization, while examining methodology to implement each of them.

BUSN 641: SURVEY OF INNOVATIONS AROUND THE WORLD (3 CREDITS)

This course introduces students to a variety of innovations occurring around the world through an examination of how science, technology and innovation can support economic growth in emerging economies, and how they can help those economies augment participation in the global economy. The course focuses on the phenomena of technological catch-up and leapfrogging.

BUSN 642: CORPORATE AND NATIONAL TRADE AND INVESTMENT SECURITY ISSUES (3 CREDITS)

Corporate and National Trade and Investment Security Issues analyzes and addresses the evolving nature of national trade and the current investment security issues for MBA students. In this current globalized economy, trade and investment has several challenges and lessons both students and practitioners need to learn to navigate successfully. Students will study in-depth business and country-specific case-studies for improved analysis and understanding of Corporate and National Trade and

Investment Security Issues. Students will learn the importance of trade, trade negotiations, challenges in the globalized business economy, and solutions to globalized business (in)security. Students will effectively assess quantitative and qualitative information in the global business world and improve understanding of key Corporate and National Security Trade and Investment Security Issues.

BUSN 644: INTERNATIONAL PATENTS (3 CREDITS)

This course introduces students to the basic principles and legal instruments of international intellectual property law, including examination of the Paris Convention for the Protection of Industrial Property, the Berne Convention for the Protection of Literary and Artistic Property and the WTO Agreement on Trade-Related Aspects of Intellectual Property (TRIPS). The course serves as a basic introduction to the field of intellectual property, as well as to the international dimension of the field.

BUSN 645: REGIONAL TRADE ISSUES (3 CREDITS)

This course covers the transactional approach to legal problems encountered in commercial and financial business ventures that cross national borders. Topics include form of doing business, including formation of contracts and the range of issues presented-such as choice of law, choice of forum, commercial terms, force majeure, sales, distribution and agency law, franchise, licensing arrangements, and foreign direct investments; the operations of the universities of the World Trade Organization; investment in free trade areas such as the European Union and NAFTA; and issues of transfer of intellectual property and international dispute resolution. Students will gain exposure to analyzing various international business agreements and documents including global joint venture agreements and privatization provisions, sales and letters of credit, distribution and franchise agreements, international development and investment agreements, letters of intent for mergers and acquisitions, and technology licensing agreements.

BUSN 646: COMPETITION POLICY ACROSS NATIONS (3 CREDITS)

This course introduces students to competition policy in a global context. Over 90 countries have competition policies. The focus here will be on Canada, the U.S., the E.U., China, Japan, and South Korea. Students will learn which business practices are apt to get their company in trouble in domestic

and international markets. The economic rationale for prohibiting such practices will be explained to enhance understanding of the policies that they will encounter. Strategies for avoiding antitrust violations will be discussed and evaluated. For students to get a good appreciation for international antitrust law and the economic analysis that drives it, reading includes some case excerpts as well as some economic analyses of market structure and business practices.

BUSN 647: EMERGING MARKETS (3 CREDITS)

This class introduces doing business in emerging markets. The unique aspects of emerging markets and challenges for businesses will be assessed. Having explored and examined common issues in global emerging markets, students apply and analyze these issues in different country contexts.

BUSN 654: GLOBALIZATION AND BUSINESS STRATEGY (3 CREDITS)

This course creates a political, economic and technological context for global business. This course examines the effects of globalization, how governments and universities address both positive and negative effects of globalization, how businesses organize to operate in the world, and how growth and development can be sustainable.

BUSN 655: CONFLICT ANALYSIS, MEDIATION & NEGOTIATION (3 CREDITS)

Conflict analysis, resolution and mediation presents theories, strategies and styles – within International, Organizational and employee context. In addition to the theory and exercises presented in class, students practice negotiating with role- playing simulations that cover a range of topics, including difficult situations such as cross-cultural mentoring and an emergency. The course covers conflict management as a first party and as a third party: third-party skills include helping others deal directly with their conflicts, mediation, investigation, arbitration, and helping the system change because of a dispute.

BUSN 659: RISK ASSESSMENT IN CONFLICT REGIONS (3 CREDITS)

This course is a specially designed, interactive seminar to introduce students in the field of Business Management to the impact of geopolitics on economic and financial interests and strategic investments. The seminar focuses on several regions experiencing conflicts to project the major trends to expect in the coming year and decade. It covers areas such as the Greater Middle East, North Africa, Sahel, Europe, Russia and the Caucasus as well as parts of

Latin America. The seminar will bring input and information from the field of comparative conflict to the field of economic strategic planning. A unique offering of BAU, the seminar is comprised of lectures, interactive exercises and guest speakers.

CAPS 501: RESEARCH METHODS (3 CREDITS)

This course provides students with the commonly used quantitative and qualitative research methods in social sciences. The course helps students explore the academic resources available to them through BAU and other scholarly robust platforms. Students will gain an appreciation for the scientific method and principles and develop an understanding of various research designs and their use. Students will develop an ability to identify a problem and formulate research questions; conduct a literature review and design a study; create a data collection tool; understand basic statistical concepts and their applications; collect and analyze data; read, understand and critically evaluate others' research; and write a research paper. Students will have a chance to gain hands on experience in "reading" and analyzing data from various sources. At the end of the course, students will be educated consumers of social science data.

CAPS 621: CAPSTONE PROJECT (3 CREDITS) – PREREQUISITE: ALL CORE COURSES

All graduate students are required to complete a capstone project related to the student's concentration. Each student may choose a project of his or her choice, under the guidance of a capstone advisor. The parameters of the course will be determined by the advisor and the student.

CAPS 623: INTERNSHIP (3 CREDITS) – PREREQUISITE: ALL CORE COURSES COURSE FEE: \$1,025.00 (INTERNSHIP PLACEMENT)

The Internship is a capstone course that is designed to provide the student with an opportunity to gain knowledge and skills from a planned work experience in the student's program of study. The internship will provide graduate-level, career-related experience, and workplace competencies that employer's value when hiring new employees. The purpose of the Internship course is to provide each student with practical experience in a standard work environment.

CMPS 501: FUNDAMENTALS OF DATA SCIENCE (3 CREDITS)

This course introduces data science, describing the theories and practices of data collection, classification, processing, and analysis. Students will learn an overview of common types of data and the challenges practitioners face in the modern world of digital information and its massive forms. The course focuses on using various tools and techniques that experts in the field use to perform tasks, including computer programming languages, database systems, and system commands. Students will also learn to apply the results of data analysis for decision-making purposes.

CMPS 502: CYBER SECURITY (3 CREDITS)

This course introduces students to the field of cyber security. The goal is to educate and train students to understand general concepts and use the necessary tools to detect and prevent vulnerabilities in computer networks and systems. Students will be exposed to various cyber security tools used for the analysis, detection and prevention of threats. They will gain a thorough understanding of current cyber security technologies and ways of utilizing them to avoid attacks in the cyber world.

CMPS 510: PRINCIPLES AND CONCEPTS OF SOFTWARE ENGINEERING (3 CREDITS)

This course covers the principles, concepts, methodologies, and digital tools for developing software systems and applications. The subjects focus on the principles of Software Development Life Cycles and Object-Oriented Software Design. Students will learn to apply Unified Modeling Language (UML) notations and diagrams in the Software Modeling and Specifications. The software projects include writing software documentation as a project and developing a software application, including product integration and process development. Personal and team software processes for project management will also be mandatory for this course.

CMPS 514: MANAGEMENT INFORMATION SYSTEMS (3 CREDITS)

This course studies systems used by companies to accumulate, classify, and organize information to aid managerial decision making. It emphasizes the considerations of upper-level management concerning the development, deployment, and use of information systems.

CMPS 515: NETWORK SECURITY AND CRYPTOGRAPHY (3 CREDITS) PREREQUISITE: CMPS 514

This is an introductory course where fundamental concepts in cryptography and network security are explained. After completing the course, students will get basic understanding about encryption, decryption, stream ciphers, block ciphers, public-key cryptography, digital signatures, hash functions, 1message authentication codes and key distribution protocols.

CMPS 516: MODELS AND ALGORITHMS IN AI ENGINEERING (3 CREDITS) PREREQUISITE: BGDA 511

The course covers deterministic and stochastic AI algorithms, including the implementation, evaluation, and optimization using algorithms. Students will learn to analyze discrete and continuous problems using AI's modeling and complexity analysis of mathematical methods. The course also discusses fundamental knowledge, including discrete mathematics, mathematical logic, functional analysis, and stochastics, that enables students to comprehend more advanced AI-based algorithms, models, and systems.

CMPS 517: COMPUTER FORENSICS (3 CREDITS) PREREQUISITE: CMPS 514

This is an applied course on techniques for computer forensics in Linux and Windows based systems. In this course, the process of computer forensics investigation will be presented in detail. Details on techniques for evidence collection will be given first. Different techniques for analyzing the collected evidence will be explained. Finally, students will learn how to go over the found evidence and present it to authorities. Topics such as custody of chain, evidence preservation and verification will be explained in detail.

CMPS 520: DATABASE DESIGN CONCEPTS (3 CREDITS)

This course covers the design and manipulation of relational databases. The topics focus on data modeling of various domains and industrial applications. Students will learn key aspects of database concepts, including database design, data dictionaries, data manipulation, data normalization, data integrity, and data retrieval with the intensive use of Structure Query Language (SQL). The course also introduces students to data transfer using the Extensible Markup Language (XML) and the XML Stylesheet Language (XSL) for data transfer. Students learn to analyze business processes with data-related

issues and implement database solutions.

CMPS 521: DATA VISUALIZATION (3 CREDITS) PREREQUISITE: BGDA 522 (MSDSPP ONLY)

This course introduces the foundation and the state of the art of data visualization that explores and reflects on the design, application, and evaluation of a diverse range of quantitative data. Students will demonstrate how common types of information can be visually, intuitively, and interactively represented. The course provides a first-hand experience of visualizing various realistic data types. Students will intensively utilize a computer programming language, application programming interfaces (APIs), packages, and visual analytics platforms to explore, analyze, and produce visualization of data.

CMPS 524: COMPUTER NETWORKS AND MOBILE COMMUNICATIONS (3 CREDITS) PREREQUISITE: CMPS 514

This course provides a comprehensive overview of computer networks and mobile communications technologies. The topics include computer networks, Internet, TCP/IP, transport layer protocols, routing layer protocols, medium access control protocols, wireless channel models, packet scheduling, multimedia networks, cellular networks (GSM, GPRS, CDMA, 3G, 4G, etc.), and wireless local area networks. The course aims at equipping students with a deeper understanding of computer and mobile networking technologies and related problem-solving discipline using mathematics / engineering principles.

CMPS 525: CLOUD COMPUTING AND INFRASTRUCTURE (3 CREDITS)

The course examines cloud providers' APIs, including Amazon, Microsoft Cloud, and Google Cloud, for constructing, deploying, and maintaining systematic images and applications. Students learn to utilize and manage Cloud as the infrastructure for existing and new services. The course covers open-source implementation for clustering computation environments. Students will also analyze traditional and Cloud computing infrastructures to deploy new computer systems and applications, including load balancing, caching, distributed transactions, and identity and authorization management. Students will utilize Windows and Linux operating systems to gain experience with standard OS.

CMPS 530: MACHINE LEARNING & PATTERN RECOGNITION (3 CREDITS) PREREQUISITE: BGDA 522 OR CMPS 516

This course covers fundamental machine learning topics including pattern recognition systems and components; decision theories and classification; discriminant functions; supervised and unsupervised training; clustering; feature extraction and dimensional reduction; sequential and hierarchical classification; applications of training, feature extraction, and decision rules to engineering problems.

CMPS 560: OBJECT-ORIENTED SOFTWARE DEVELOPMENT

This course covers in-depth object-oriented programming (OOP), including encapsulation, polymorphism, and inheritance for software development. Students will learn various advanced techniques of data abstraction, typing, access control, File/IO, exception handling, event handling, databases, and concurrency. OOP project focuses on using advanced software design and development techniques. Software development projects using an OOP programming language are mandatory for this course to ensure students have the computer programming skills and experiences necessary to take a leadership role in software engineering.

CMPS 564: INFORMATION SECURITY MANAGEMENT (3 CREDITS) PREREQUISITE: CMPS 515

The aim of this course is to learn how information can be held securely in businesses and discuss information security from a managerial perspective. Moreover, the standards and approaches used for information security management are discussed. The standard of information security management, which is ISO27001 is discussed in detail.

CMPS 565: CLOUD DATA STORAGE MANAGEMENT (3 CREDITS)

This course focuses on using technology and security to manage data storage installed on-premises and in the cloud at the enterprise level. Students will study various data storage and networking components to effectively manage data confidentiality, availability, and integrity. The course also covers using the Hadoop environment and database techniques (SQL and NoSQL) to handle massive data sets. Students will take a leadership role in analyzing traditional and cloud computing infrastructures to provide a recommendation to organizations and manage a project for cloud storage installation and data

migration.

CMPS 570: SOFTWARE DESIGN AND ARCHITECTURE (3 CREDITS)

This course covers methods, processes, and notations for assessment of the design and architecture in software development. Students will practice examining digital components to explore alternatives for attributes needed to achieve the development projects. The process includes software modeling, software abstractions, design patterns, architectural designs, risk management, etc. The subjects of component reusability, availability, integrity, and security will also be discussed and practiced. Students will learn to use Object Constraint Language (OCL) to declare rules applicable to the Unified Modeling Language (UML).

CMPS 578: CYBER SECURITY LAW (3 CREDITS)

Information and communication technologies (ICT) are spreading into all aspects of our lives. Our increasing dependency on ICT is making us vulnerable to cyber-crimes committed against our information systems. This course provides the necessary knowledge to judicially assess electronic evidence and handle cybercrime incidents.

CMPS 580: DEVELOPMENT OF GRAPHICAL USER INTERFACE (3 CREDITS)

This course covers the principles and practices for Graphical User Interface (GUI) Development, including design and development. Students will learn to apply cognitive science and psychology to integrate GUI components, such as a menu, text field, checkbox, radio button, drop-down box, text area, icon, etc., that form effective and user-friendly interfaces. The course is programming intensive in GUI development for various types of software applications, including standalone user interfaces, web-based user interfaces, and mobile application interfaces, including analyzing, designing, developing, testing, and maintaining.

CMPS 610: NATURAL LANGUAGE PROCESSING (3 CREDITS) – PREREQUISITE: CMPS 516

This course covers the theories and methodologies of Natural Language Processing (NLP). The course focuses on analyzing NLP tasks (syntax and semantics) and algorithms used in AI and machine learning to solve real-world problems. Students will learn to use NLP statistical methods and neural-network learning algorithms to extract knowledge from annotated text to perform the NLP tasks. Students will gain hands-on

experience using NLP libraries and tools to implement NLP processes and applications.

CMPS 612: IMAGE PROCESSING AND COMPUTER VISUALIZATION (3 CREDITS) – PREREQUISITE: CMPS 516

This course covers computer vision and its underlying concepts in deep learning that introduce students to the computational approaches for the analysis and interpretation of digital content. The course focuses on digital image analysis techniques in 2-D and 3-D formats to solve real-world problems. Students will learn various techniques in image manipulation, including image formation, image segmentation, image restoration, and image enhancement. Students will also practice the process of object recognition and feature extraction.

CMPS 615: ADVANCED DATA MODELING (3 CREDITS) – PREREQUISITE: CMPS 521 (MSDSP ONLY)

This course focuses on advanced data modeling techniques and algorithms used in AI and Machine Learning. The topics include decision classification, supervised and unsupervised training, and natural language processing. Students will learn how to apply the models and algorithms to unstructured and massive data for predictive analytics and network analysis. The course provides students with opportunities to work with real-world case studies and utilize digital tools for processing.

CMPS 618: PENETRATION TESTING (3 CREDITS) – PREREQUISITE: CMPS 564

Penetration testing, the most indispensable component of proactive cyber security, is commonly known as the exposition of information systems to security checks by expert professionals with the purpose of determining security vulnerabilities and thus helping take necessary countermeasures ahead of their possible exploitation by cyber attackers. In this course, the students will be taught methods for detecting security vulnerabilities in information systems and possible exploitation of these vulnerabilities to penetrate computer systems. Topics covered will include network scanning, exploitation and post-exploitation, password attacks, and attacks on wireless and web applications.

CMPS 620: SOFTWARE PROJECT MANAGEMENT (3 CREDITS) – PREREQUISITE: CMPS 570

This course covers fundamental project management techniques, including prescriptive planning, budgeting, and staffing. Students will also learn risk

management techniques to mitigate potential obstacles and barriers internally and externally. The course will introduce students to digital tools like Jira Software to create a collaborative environment for assigned tasks, milestone planning, critical paths, projected estimation, progress tracking, etc. Students will learn hybrid project management methods, including traditional and agile project management, for appropriate utilization and execution of the plan and take a leadership role as a project manager.

CMPS 623: WEB APPLICATION SECURITY (3 CREDITS) – PREREQUISITE: CMPS 564

The web application technology stack contains various protocols, standards, frameworks and mechanisms at both the client and server sides. Due to these complexities and the unavoidable rapid technological shift, serious security vulnerabilities are the inevitable by-products, as encountered in insecure portals, web sites and applications. These vulnerabilities are commonly exploited by attacks such as SQL Injection, Cross Site Scripting, Cross Site Request Forgery, Session Overloading, Brute Forces, Denial of Service, Log Forging, Dangerous JavaScript Callbacks, Race Conditions, JSON Hijacking, Length Extension Attacks, Logical Attacks, etc. This course covers the common critical web application security vulnerabilities and hacking techniques exploited by malicious people. Students will learn solid defense techniques, such as input/output validation, right usages of authentication, authorization, cryptographic functions and secure configuration, to thwart these hacking attempts.

CMPS 625: CLOUD SECURITY (3 CREDITS) PREREQUISITE: CMPS 525

This course covers concepts and processes of the analysis, design, and implementation of computation and storage in Cloud environments and infrastructure. DevSecOps methodology is also discussed to ensure and strengthen the security of digital resources and data in the cloud. Students will learn various theories and practices to assess risks associated with cloud computing and shared responsibility aspects. Activities for the course cover deployment of virtual infrastructures, execution of installation scripts, exploration of virtual switching, management of resources, maintenance of backups, and detection of fault analysis. Students will also analyze security aspects between traditional and cloud computing infrastructures.

CMPS 627: WIRELESS SENSOR NETWORKS (3 CREDITS) PREREQUISITE: CMPS 524

This course provides a comprehensive overview of wireless sensor networks and their real-world applications. The topics include wireless sensor network protocols, network architectures and management, error control techniques, optimal packet size design, cross-layer communication protocol solutions, localization algorithms, ZigBee, IEEE 802.15.4, 6LoWPAN, underwater and underground sensor networks, wireless sensor and actor networks, and wireless multimedia sensor networks. The course aims at equipping students with a deeper understanding of wireless sensor networking technologies and related problem-solving discipline using mathematics / engineering principles.

CMPS 635: SOFTWARE TESTING AND QUALITY ASSURANCE (3 CREDITS) PREREQUISITE: CMPS 510 & CMPS 560

This course covers the fundamentals of software testing to ensure the quality of the software application. The focus will be on implementing manual and programmatic testing processes to remove errors, mitigate risks, and reach software quality goals. The course introduces to students standard testing principles, fundamental test processes, test design techniques, and test management. Students learn to execute test plans and activities, including manual and automated testing. Automation testing tools will be intensively utilized in this course to enable students for the necessary tasks of software testers. This course is computer programming intensive.

CMPS 640: CLOUD SYSTEM ADMINISTRATION AND ARCHITECT (3 CREDITS) PREREQUISITE: CMPS 525

This course covers the intensive tasks of system administrators to maintain effective operations on modern operating systems, including Windows and Linux, that runs on-premises and in the Cloud. The activities focus on assessing system logs to identify issues, applying patches to update systems, and performing system configurations. Students will explore the aspect of DevOps methodology to perform the installation, configuration, and maintenance of hardware and software in cloud environments effectively, including task automation and shell scripting. Students will also learn to assess gaps between complex business problems and Cloud architectures to build solutions, including front-end and back-end platforms, cloud-based delivery, and network connections.

ECON 505: ECONOMICS (3 CREDITS)

This course encompasses both Microeconomics (the impact of economic decisions made by individuals and firms) and Macroeconomics (the study of large-scale economic factors). As such, the course examines (a) the concepts of supply, demand, market equilibrium, and competition and the impact that external forces such as taxation, government policy, and globalization have on them; and (b) economic growth, inflation, unemployment, savings, and investment to understand how these factors interact to impact the business cycle and overall national income.

ECON 580: HUMAN RESOURCE ECONOMICS FOR BUSINESS (3 CREDITS) – PREREQUISITE: ECON 505 ECONOMICS

This course provides a survey of the concepts and techniques for the analysis and management of human resources in business. Topics covered include: labor market analysis, labor supply and demand analysis, setting hiring standards, the hiring process, worker productivity, human capital theory and pay scales, turnover and layoffs, information and signaling, seniority and motivation, how labor market discrimination affects wages and employment and policies to deal with it, managing employee benefits, the economics of minimum wages, job evaluation and the role of unions in human resource management.

ECON 605: QUANTITATIVE METHODS IN BUSINESS AND ECONOMICS (3 CREDITS)

Introduces students to the basic concepts of statistical inference needed for a rigorous and informed analysis of business and economic decisions. It also studies how large-scale unstructured and multi-structured data sets are utilized to determine patterns and trends essential in forming better and faster business strategies. Topics include basic data analysis, random variables and probability distributions, sampling distributions, interval estimation, hypothesis testing and statistical significance, and linear regression. Examples and case studies are chosen from finance, economics, marketing and management.

ECON 655: ECONOMICS OF INTERNATIONAL DEVELOPMENT (3 CREDITS)

The course examines, at a more advanced level, macro models of development that seek to evaluate disparities in income across emerging and developing economies. The course further dissects the markets within these economies, with an emphasis on understanding market failures and potential corrective policies.

ECON 656: GEOGRAPHIC INFORMATION SCIENCE (GIS) (3 CREDITS)

Geographic Information Science (GIS) has emerged as a powerful data visualization and analysis discipline. This course investigates how GIS is currently being used and applies it to understand better and address environmental problems, as well as manage and conserve natural resources. The lectures discuss the basic and current applications of GIS using environmental datasets, maps, modeling, and analysis. It also examines impediments to GIS. Environmental GIS datasets deal with several applications, from the simple Digital Elevation Model to the Land use Land-change, or Solar Analysis. Specific topics include climate change, biodiversity conservation, forest management, soils management, agriculture, natural hazards, water resources, environmental challenges in an urban environment, and alternative energy.

ECON 657: INTERNATIONAL ECONOMICS (3 CREDITS) – PREREQUISITE: ECON 505

This course is an introduction to the field of international economics. It is designed to familiarize students with basic concepts about the international dimensions of economics in today's world. It affords a strong foundation for more advanced courses, addressing a variety of topics in international economics, including analysis of modern trade theories and issues concerning international competitive strategy. It also investigates the effect of trade patterns and commercial policy on domestic business activity and the influence of macroeconomic policies across nations. Other topics include gains from trade and their distribution; analysis of protectionism; strategic trade barriers; trade deficits vs. surpluses; exchange rate determination; and government intervention in foreign exchange markets.

ECON 665: U.S. ECONOMIC & TRADE POLICY (3 CREDITS)

This course discusses current issues of international economics and how the growing integration of national economies has changed the way the world works. The course framework is built upon theoretical models of microeconomics (and macroeconomics) to analyze some of the most important issues of the international economic environment of the past fifty years, with particular emphasis on the role of U.S. trade policy and of U.S. relations with its trade partners.

ECON 670: URBAN ECONOMICS, FINANCE AND GOVERNANCE (3 CREDITS)

Urban economics deals with a range of important questions dealing with the origin, size and performance of cities. Some of the most interesting issues include: Why do firms and human beings cluster in cities? Why do some cities grow faster than others? How has history been shaped through urbanization? What are the challenges for cities in developing and developed countries? How technology and innovation in design can solve urban problems? Why other countries and cities could not develop another Silicon Valley? What are various models of governing cities? How to make cities more competitive? This course is designed to help students to engage with these questions among others by utilizing theories and principles drawn from economics, urban policy, and urban governance. Cities are facing a set of challenges such as climate change, inequality and demography. At the same time cities are finding new ways to find solutions to these problems. The unique nature of city as a unit of policymaking makes urban economic development and governance an important area to understand these developments.

FINC 509: FINANCIAL MANAGEMENT (3 CREDITS)

Knowledge of financial principles is beneficial to managers in nearly all business settings. This course combines both conceptual and mathematical information. This course covers advanced topics in financial accounting, including financial statements; income statement items; cash and inventories; payables and receivables; property, plant and equipment, employee benefits; long term liabilities; taxes; and non-profit accounting. Students also develop skills in presenting financial reports. Through this course, students will obtain basic financial math skills and a thorough introduction to financial management concepts.

FINC 573: MONEY AND BANKING (3 CREDITS)
PREREQUISITE: ECON 505

This course provides an overview of the structure and performance of banking universities, the evolving role of central banks in monitoring and supervising financial intermediaries, and the role of money and monetary policy in influencing inflation, interest rates, and the economy. The changing structure and regulation of financial systems will be discussed as well as the challenges faced by the financial system in the aftermath of the Great Recession. The various objectives of central banking are analyzed, including regulatory functions, monetary policy, and exchange rate policy. The nature of --and impact of-- money on the economy is explained and the effects of money demand and supply on inflation and aggregate demand are introduced using macroeconomic models.

FINC 621: FINANCIAL INVESTMENT STRATEGIES (3 CREDITS) – PREREQUISITE: ECON 505

The main objective of this course is to study fundamental concepts of investments in financial markets. The course provides a survey of the theory and evidence relevant to investment strategies. Topics include asset allocation and portfolio diversification, long-short strategies, margin transactions, factor models, long-horizon investing, hedge funds, mutual funds, behavioral finance, performance evaluation, trading, models, valuation of assets, and the pricing of financial instruments, including derivatives.

FINC 647: INTERNATIONAL FINANCIAL INSTITUTIONS (3 CREDITS)

This course examines international financial institutions and dynamics between the public and private sectors. It begins with an overview of the role, mechanics and main channels of financial intermediation. It then turns to developing student understanding of inherent risks and fragilities of international financial institutions, along with the safeguards that have been established to mitigate them, both nationally and internationally. It reviews the development of and interaction between international and domestic financial markets, as well as the evolving relationship between the public and private sectors. It examines how several financial crises, particularly that of 2007, have made people rethink macroeconomics and modify the system of international financial institutions.

FINC 649: GLOBAL FINANCIAL MARKETS (3 CREDITS)

The purpose of this course is to extend the principles of finance from a single country setting to a multinational setting. This includes foreign exchange (spot, forward and futures) transactions, swaps, and synthetic securities. International and global banking institutions will be surveyed and their role in domestic and global financial intermediation examined. International parity relationships will be studied, including interest rate and purchasing power parities. The role of political risk and default risk in international finance will also be discussed. The role of global financial markets in accomplishing an optimal allocation of economic resources around the world is a central issue covered throughout the course. Case studies, group work and interactive class discussions will be emphasized. Throughout the course, relevant current events are examined and used to illustrate and reinforce discussion points.

FINC 660: GLOBAL FINANCIAL ETHICS (3 CREDITS)

This course covers the financial code of ethics and addresses sustainable financing, socially responsible investment (SRI) issues, ethical banking, and legal and practical aspects of integrating environmental, social, and governance (ESG) issues to institutional investment. The course gives a detailed overview of major institutional actors, key players in global networks in the field of banking and sustainable financing, and the international standards in the fight against tax avoidance and money-laundering.

MGMT 502: LEADERSHIP AND ORGANIZATIONAL BEHAVIOR (3 CREDITS)

This course explores a framework for competing and winning in a world of constant turbulence and disruption and also delves into understanding why change is so hard. Modifying an organization's structure and operations is difficult enough, but to bring about real change you need to also affect people's behavior. And that is never easy. To bring theory to life, the course utilizes real-life stories of how successful organizations were able to connect with people's emotions, help them to think and feel differently, and inspire them to achieve shared goals.

MGMT 532: STRATEGIC MANAGEMENT (3 CREDITS)

The performance of firms is rarely uniform. Some do better than others. Strategy differences help explain this phenomenon. The scope of a firm's operations (that is, its product and service markets) and how it competes within that scope are two issues relating to its strategy. This course is a theoretical, quantitative exploration of industry structure, industry dynamics, and business and corporate strategy. It evaluates firm competition, strategy, and performance from a firm-centric perspective, and it assumes a familiarity with finance, accounting, information technology, and marketing. Grounded in economics and quantitative analysis, this course uses concepts such as supply and demand, marginal, average, and total costs and revenues as a conceptual framework for understanding strategy in modern, for-profit firms.

MGMT 533: BLOCKCHAIN TECHNOLOGY AND BUSINESS MANAGEMENT (3 CREDITS)

A blockchain is a growing list of records, called blocks, which are linked using cryptography. By allowing digital information to be distributed but not copied, blockchain technology created the backbone of a new type of internet. Originally devised for the digital currency, Bitcoin, the new technology is being applied in a variety of contexts to facilitate business organization and management as well as policy institutions. It eliminates intermediaries, reduces transaction costs and improves efficiency enormously. This course introduces blockchains and applies it in a variety of business and policy contexts.

MGMT 610: ADVERTISING MANAGEMENT (3 CREDITS)

This course is an introductory study of advertising from the specific point of view of Account Management within the advertising agency. It involves the understanding and appreciation of proper strategies--Advertising, Creative and Media as bases for correct, effective and efficient advertising campaigns in the Philippines. It also examines fully the roles played by the different departments of an agency and the various segments of the advertising industry that pertain to each of them. This course will benefit future advertising practitioners whether as account managers in ad agencies, or as advertising or brand managers of clients, or as heads of their own companies.

MGMT 611: THE ENTREPRENEURIAL MANAGER (3 CREDITS)

This course helps students increase their understanding of entrepreneurship and small business management. It investigates the management of startups and small companies. Particularly useful to those seeking to start a new business, work within an entrepreneurial firm, or invest in or advise entrepreneurial endeavors, it addresses aspects of entrepreneurship such as identifying strong business opportunities, obtaining funding for and starting a new endeavor, growing a company and maximizing rewards. The course also investigates how entrepreneurial endeavors can benefit society.

MGMT 612 : NON-PROFIT MANAGEMENT (3 CREDITS)

This course is a graduate level general introduction to the theory and practice of effective management of nonprofit organizations, with a heavy emphasis on practical application. Real world examples and experiences will be used to ensure that the academic lessons translate to the nonprofit experience. We will address some of the pertinent management issues of the often-overlooked trillion-dollar nonprofit sector (also known as the Third Sector) that includes education, research, health care, art, culture, religion, communications, social welfare and services, advocacy, legal services, international assistance, foundations and mutual benefit professional and trade associations.

MGMT 614: MANAGING INNOVATION (3 CREDITS)

This course introduces students to the dynamics of industries driven by technological innovation. It enables students to think strategically about technological innovation and new product development and deployment. The course addresses topics such as fiercely competitive industries; choosing optimal innovation projects; choosing between remaining independent or forming partnerships, along with considerations for developing the best strategies for collaboration; choosing between protecting proprietary technologies or promoting rapid dissemination in order to take advantage of potential accompanying benefits; the advantages and limitations of increasing flexibility and, thereby, responsiveness; and improvement of new product development capabilities.

MGMT 615: INTRAPRENEURSHIP (3 CREDITS)

This course considers the rising practice of *Intrapreneurship*, which, in general terms, is the application of entrepreneurship to developing new ventures within an existing firm. Examining Intrapreneurship as a corporate strategy, the course relates Intrapreneurship to other functions such as Corporate Venturing, New Product Development (NPD), Research & Development (R&D) and Corporate Labs; examines Entrepreneurship for clues to the successful practice of Intrapreneurship; explores actual Intrapreneurial ventures with practicing executives; and helps students develop an "Intrapreneurial Toolset."

MKTG 512: MARKETING MANAGEMENT (3 CREDITS)

This course is designed to introduce students to the principles and practices of marketing. After completing this course students will be to: assess market opportunities by analyzing customers, competitors, collaborators, context, and the strengths and weaknesses of a company; develop effective marketing strategies to achieve organizational objectives; and design a strategy implementation program to maximize success.

MKTG 615: MARKETING ANALYTICS (3 CREDITS) **PREREQUISITE: BGDA 555 (BIG DATA MAJORS)**

This course will focus on developing marketing strategies and resource allocation decisions driven by quantitative analysis. Topics covered include market segmentation, market response models, customer profitability, social media, paid search advertising, product recommendation systems, mobile geo-location analysis, media attribution models, and resource allocation. The course will draw on and extend student understanding of issues related to integrated marketing communications, pricing, digital marketing, and quantitative analysis. The course will use a combination of cases, lectures, and a hands-on project to develop these skills.

MKTG 618: DIGITAL MARKETING, SOCIAL MEDIA & E-COMMERCE (3 CREDITS)

The course explores the fundamentals of digital marketing and e-commerce and aims to help students interpret and analyze the development and implementation of digital marketing strategies. The course also explores the fundamental concepts of e-commerce through different platforms such as websites, mobile sites, and apps. The students will also be able to discuss and criticize ethical, social, and political issues in e-commerce throughout the course.

MKTG 622: PRICING (3 CREDITS) – **PREREQUISITE: MKTG 512**

Smart pricing is a critical aspect of a company's efforts to create value for the customer. It is a matter of significant importance to marketing executives. A thorough understanding of pricing strategies constitutes critical knowledge for anyone interested in running their own business or pursuing a career in product management, financial management, or various other areas. Through case analysis and real-world pricing problems, this course addresses the practical needs of the marketing manager.

MKTG 641: BRAND MANAGEMENT (3 CREDITS)

This class provides students with a fundamental understanding of how to build, measure, and manage a brand. After completing this course students will be able to overcome the situations and challenges frequently encountered by brand managers, they will be informed about the concepts and analytical techniques commonly used by brand managers, and they will be able to develop and implement new brand strategies effectively.

POLS 610 GLOBAL AFFAIRS & FOREIGN POLICY (3 CREDITS)

This course will introduce students to techniques and theories for analyzing and understanding how governments make foreign policy decisions. The course will survey the leading theories on foreign policy decision-making to provide an avenue for addressing questions such as: What role do personalities play in the process? Does bureaucracy have an impact? Where do questions of national identity and ambition fit in? How does the form of political regime - democratic or authoritarian - impact the decision-making process? What impact do external factors and structural constraints have on foreign policy decision-making? The course will also focus on participation and application of the theories.

POLS 615 PUBLIC MANAGEMENT (3 CREDITS)

This course introduces students to the conceptual background and practical tools necessary to effectively work in public (government) organizations or organizations which function directly with governments at various levels (non-governmental organizations or NGOs). The course will introduce public management concepts so students may gain the competencies required to address management challenges. Important questions related to the management of public sector organizations include (1) What makes an organization public? (2) How does the internal and external operating environment of

public organizations affect management? (3) How is the performance of public organizations measured? (4) What makes for an effective public manager? This is accomplished through exploration and application of theory and concepts through practical exercises and activities. From a managerial perspective, the course focuses on the structure and function of local, state, and federal agencies. Due to the increasingly complex nature of public service delivery, how the private and nonprofit sectors interact with public organizations to provide public services will also be addressed.

POLS 620 PUBLIC POLICY RESEARCH PROJECT (3 CREDITS)

This course is designed as a capstone course to provide students with the opportunity to demonstrate mastery of skills learned during their study in the MSDSPP program. Students will produce a research project utilizing the knowledge, tools, and experiences they have acquired studying in the program.

POLS 630 STRATEGIC PLANNING (3 CREDITS)

This course focuses on the role of public/non-profit organizations in society. It highlights the changes that have occurred in public expectations and public policies toward these organizations and the need for the development of strategic planning skills in order to ensure effectiveness, transparency, and continued support. This course examines the fundamental aspects of strategic planning, how public and non-profit organizations can utilize strategic planning to take advantage of opportunities and challenges found in the public policy arena, and how application of these principles creates positive change in the delivery of public services.

POLS 642: INTERNATIONAL TRADE (NAFTA/EUROZONE/ASEAN/MERCOSUR) (3 CREDITS)

Students will learn of the origins, evolution, complexities and trends in international trade agreements and organizations. This necessarily requires an analysis of how trade negotiations are carried out and their objectives, the role of regional versus multilateral trade agreements, the World Trade Organization and other international institutions, and trends in globalization. Students will utilize case studies to examine both nations and institutions.

POLS 643: WORLD ENERGY POLITICS (3 CREDITS)

This course addresses the economics and politics of energy globally. Using case studies, students will look at both national energy resources, policies and trends but also regional and international policies and trends that affect energy supply and demand. The course will pay particular attention to traditional energy supplies, renewables, and uses of energy supplies politically.

POLS 645: TRANSNATIONAL SECURITY (3 CREDITS)

What sorts of transnational security challenges do states face in the information age, and how do they manage these threats? Global threats such as nuclear proliferation, climate change, environmental degradation, refugee streams, or infectious diseases do not stop at national borders. Terrorist and criminal networks not only transcend international borders, but also go beyond traditional state jurisdictions and stove-piped hierarchies. This course will analyze the nature of the challenges and look at the policy, legal, and institutional mechanisms the United States and other countries have found/must find to manage and counter these threats.

POLS 647: INTERNATIONAL LAW (3 CREDITS)

This course is an introduction to the field of international law. It is designed to familiarize students with basic concepts about the international dimensions of law in today's world. It affords a strong foundation for more advanced courses, addressing a variety of topics in public international law, private international law, and comparative law. Students learn about the sources of international law and issues relating to the use of force and international human rights. The course also investigates the matters of international business transactions, international economic and environmental law, and how issues of international law play out in domestic courts.

POLS 651: POLICY FORMULATION & IMPLEMENTATION (3 CREDITS)

This course focuses on how to form and implement policies. Students will learn about the creation of laws, how they are carried out, and specifically how they apply to business and economics.

POLS 652: GENDER, DEVELOPMENT & GLOBALIZATION (3 CREDITS)

This course introduces major issues facing women and men around the world who are marginalized by inequitable structures and processes of globalization. Students will investigate development case studies within the context of global gender policies and social issues, especially by looking at the way women are impacted by issues related to education, health care, local and global economies, and the environments. Students will develop valuable quantitative and qualitative social science research skills and will discuss and debate critical issues. Upon successful completion of the course students will be able to: analyze and describe ways in which gender plays a role in economics, social inequality, and development; and use quantitative and qualitative research methods.

POLS 659: INTERNATIONAL COURTS TRIBUNAL, COMMERCIAL ARBITRATIONS, AND THE WTO (3 CREDITS)

This course explores the rules, practice, and jurisprudence of various international courts and tribunals. It reviews key commonalities and differences with a view to better understanding and evaluating current and possible future courts and tribunals. It also focuses on the legal obligations and policy underpinnings of the World Trade Organization and its agreements. It concentrates on the substance of WTO agreements while examining the context in which they were negotiated and discussing cases in which WTO provisions have been interpreted and applied.

STAT 510: DATA, MODELS, AND DECISIONS (3 CREDITS)

This course is designed to introduce first-year MBA students to the fundamental techniques of using data. In particular, the course focuses on various ways of modeling or thinking structurally about decision problems to make informed management decisions.

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