Council of Deans
Meeting Summary
September 24, 2019
10 a.m. – noon
Location: LMR 419

Members present: Donald Heller, Tristin Green (for Susan Freiwald), Charles Moses, Shabnam Azad-Koirala, Tyrone Cannon, Jeff Hamrick, Eileen Fung (for Marcelo Camperi), Shirley McGuire, Margaret Baker.

Members absent and excused: Marcelo Camperi, Susan Freiwald

Guest: Deborah Panter, Office of Assessment and Accreditation Support (OAAS)

The meeting began with a presentation from Associate Vice Provost Deborah Panter on USF’s state authorization activities. AVP Panter reviewed the recent history regarding state authorization decisions. During the 2015-2016 academic year, the Council of Deans agreed to continue renewing state authorization for 9 states for online programs. Since that time, OAAS has supported moving into 2 additional states and Washington D.C., and found that USF may have an online program presence, but not a physical presence, in an additional 27 states and territories. She discussed with the deans the cost of expanding state authorization into an addition 15 states and territories. Senior Vice Provost McGuire provided some context regarding the State Authorization Reciprocity Agreement (SARA). California is the only state not a member of this agreement and therefore maintaining state authorization in many states is expensive and time-consuming. The provost and the deans considered the information and decided that USF will not pursue state authorization in the remaining 15 states. The decision may be revisited in a few years. AVP Panter asked that the deans communicate to online program directors and relevant staff to visit the state authorization website for regular updates on individual states where we maintain authorization.

Dean Moses began the discussion for the next item, the Intent to Proposal for Business Analytics undergraduate major in the School of Management. Dean Moses reviewed the main points of the new program proposal, including the rationale and the program learning outcomes. The deans and provost discussed the strengths of the proposal, but decided that more information was needed regarding the differences between the proposed program and the Data Science undergraduate major in the College of Arts and Sciences. Dean Moses agreed that he and the SOM faculty sponsors of the proposal would meet with Dean Camperi and the chair of Data Science to outline the similarities and differences between the two programs. The discussion of the intent to propose will continue after that meeting.

VP Hamrick next discussed current practices regarding registration timing for graduate students. Late registration hurts our ability to collect accurate data that we use for
resource management. He sent an email to the deans with a link to a dashboard showing which graduate programs have had incomplete data close to the beginning of the year. VP Hamrick suggested that deans talk with the program directors about their onboarding practices at the “end of the funnel” (e.g., giving students internal deadlines) and asked that we try not to have so many students registering at the last minute. Having students register two weeks earlier would be helpful, with a long-term goal of having everyone registered 32 days before first days of classes with some exceptions.

VP Hamrick next turned to the discussion of extra compensation for over-enrolled courses. He asked that the schools have the same policy. The deans indicated that their school do not have a current practice regarding extra compensation for larger classes. VP Hamrick noted that the discussion will likely emerge again when deans and provost discuss a proposed for the use of large classrooms. A workgroup chaired by SVP McGuire will bring that proposal to the Council of Deans soon. The deans and provost agree that it will be important that the schools have a consistent policy.

The deans briefly discussed data they were collecting on under-enrolled courses in their schools with VP Hamrick.

Provost Heller closed the meeting by providing an update on the VP Forum on academic shared governance that will take place on Monday, October 7, 2019 from 9 a.m. to 10:30a.m. in McLaren 250.
### State Authorization Costs in a 5-Year Period

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Overall Ease of Process</th>
<th>Cost of Initial Authorization (Fees)</th>
<th>Estimated Renewal and Maintenance Costs (Fees and Labor)</th>
<th>Notes</th>
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<tr>
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<td>Legal Services and Memberships</td>
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<td><strong>Total Costs for Current States</strong></td>
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<td><strong>$60,957</strong></td>
<td><strong>$304,786</strong></td>
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<table>
<thead>
<tr>
<th>Potential States</th>
<th>Overall Ease of Process</th>
<th>Estimate of Collective Labor Hours</th>
<th>Cost of Initial Authorization (Fees)</th>
<th>Initial Authorization</th>
<th>Estimated Renewal and Maintenance Costs (Fees and Labor)</th>
<th>Estimated Labor Costs in 5 Year Period (Fees and Labor)</th>
<th>Total Costs in 5-Year Period (Fees and Labor)</th>
<th>Notes</th>
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<td>$100</td>
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<td>$700</td>
<td>$6,183</td>
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<tr>
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<td>$17,261</td>
<td>$21,261</td>
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<tr>
<td><strong>Total Costs for Potential States</strong></td>
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<td><strong>1750</strong></td>
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<td><strong>$18,250</strong></td>
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<td><strong>$258,354</strong></td>
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</table>

| **Total Costs in 5-Year Period** | | **$57,950** | **$377,786** | **$392,354** | **$628,130** | | | |

| No Cost States and Territories for 100% Online Programs (27) | | | | | | | | |
State Authorization

Council of Deans
September 24, 2019

Shirley McGuire, Ph.D.
Senior Vice Provost of Academic Affairs
Professor of Psychology

Deborah Panter, J.D.
Associate Vice Provost for Educational Effectiveness
HISTORY OF STATE AUTHORIZATION AT USF

• 2015-2016 - Council of Deans decides to limit state authorization for online education to nine states.
• 2017-Present - State authorization moves to Office of Assessment and Accreditation Support (OAAS). Some programs have expressed the need to be in more states.
ONLINE PROGRAMS

100% Online Programs:

• LLM in Taxation
• Master of Arts in Public Leadership (Hybrid - Does not trigger physical presence in jurisdictions other than D.C.)
• Master of Legal Studies in Taxation
• Master of Public Administration

Online Programs with On-the-Ground Components:

• Doctor of Nursing Practice
  o Executive Leadership
  o Population Health Leadership
  o Family Nurse Practitioner
  o Psychiatric Mental Health Nurse Practitioner

• Master of Science in Nursing for Registered Nurses
• Master of Public Health
CURRENT STATUS OF STATE AUTHORIZATION

• Full authorization in 10 states:
  - Arizona, California, Florida, Hawaii, Montana, Nevada, New York, Oregon, Texas, Washington

• Exempt status for all programs: Utah

• MA Public Leadership only: Washington D.C.

• No authorization required in 27 additional states and territories for 100% online programs that have no physical presence trigger

Total = 39 states/territories
PROGRAMS’ EXPRESSED NEED

• Programs have expressed the need to expand into additional states
• 15 additional states and Puerto Rico would require authorization to offer online education
  o Alabama
  o Alaska
  o Arkansas
  o Delaware
  o Georgia
  o Indiana
  o Iowa
  o Kansas
  o Maryland
  o Minnesota
  o New Mexico
  o North Dakota
  o Puerto Rico
  o Wisconsin
  o Wyoming
UNIVERSITY OF SAN FRANCISCO

CHANGE THE WORLD FROM HERE
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<tr>
<td><strong>Machine Learning (4 units)</strong></td>
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<td>Course Description</td>
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<td>Software Requirements</td>
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<td>Course Overview</td>
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<td>Course Objectives and Learning Outcomes</td>
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<td>Course Outline</td>
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<td><strong>Data Mining and Text mining (4 units)</strong></td>
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<td>Course Description</td>
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<td>Software Requirements</td>
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<td>Course Overview</td>
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<td>Course Objectives and Learning Outcomes</td>
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<td><strong>Thinking Like a Data Scientist (4 units)</strong></td>
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<td>Course Overview</td>
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<td><strong>Curriculum Map</strong></td>
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<td><strong>BAIS Faculty Vote &amp; Approval</strong></td>
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</table>
Business Analytics Academic Design Committee Members

BAIS Advisory Board Members
- Bill Schmarzo; CTO of IOT and Analytics at Hitachi Ventura
- Andrew Johnson; VP of Business & Corporate Development at Seclore, (USF Alumni)
- Kate Mitchell; Co-Founder and CEO at Edge Intelligence Software, Inc.

BAIS Faculty
- Mouwafac Sidaoui, Professor and BAIS Department Chair
- Tom Grossman, Professor, MSIS CO-Director
- Majid Dadgar, Assistant Professor
- Shivani Shukla, Assistant Professor

Business Analytics Proposal Editor
- Steve Huxley, Professor & BAIS UPC Representative

Important Dates
- Committee Review and feedback: March 1, 2019
- Department Review, feedback and Approval: March 18, 2019
- Submitted to UPC (Undergraduate Program Committee): April 10, 2019
- UPC Approval: May 8, 2019
- USF Curriculog / NCAP (Request for Approval of New / Changed Programs): May 2019
- USF Catalogue and online: July 2019
- Recruiting for the program: Fall 2019
- Courses available to be taught: Spring 2020
- First Class to enter the Program: Fall 2020
Undergraduate Program in Business Analytics

Business Analytics Program Rationale

The Major in Business Analytics is designed for students with majors in business and management who want to develop the knowledge and skills needed to utilize data analytics methods and principles using state of the art software tools and packages.

Designed with extensive input from an industry advisory board and business partners interested in hiring individuals to work with “data,” the Business Analytics Major is an opportunity for students who have interest in data-driven approaches to the world of business, using statistics and data modeling to develop new business insights. This blend of technology and business makes it an ideal study option for anyone with a desire to learn business programming and work with big data.

The motivation behind this new business analytics major is also reflected in the SOM’s vision and mission to educate students for an innovative and critical thinking context, as well as the AACSB’s expectations towards covering the “Spiraling demand for analytics talent is spurring innovation in degree programs.” (AACSB Blog: Big Data Big Future in Business Education, www.aacsb.edu/blog/2016/march/big-data-big-future-in-business-education).

Therefore, the business analytics major will close a gap in the majors offered by SOM and fulfill a strong need and a strong need for specific business analytics (BA) content, capabilities, and skillsets. Our Business Analytics program is about “bridging” analytical tools into the business, with the tools/algorithms embedded in commercial software. Graduates will work as front-room leaders. The discussion of a possible BA Major Program at the SOM had originally attracted interest from SOM students and highly supported by the BAIS department advisory board as well as many of the companies and business partners we spoke to in the Bay Area. As Bill Schmarzo stated, “Organizations don’t need more technologists; they need business leaders who understand what and how digital technologies – and the resulting data – can derive and drive new sources of customer, product, service and operational value. These organizations need universities to train the next generation of business students, students steeped in financial modeling, economic principles and design-driven innovation who are trained to ‘Think Like A Business Analyst’.” ¹ Our advisory board / BUAN curriculum design members had many discussions with the business/technical industry and reported back to us, one of the companies was Palo Alto Networks their CMO Rene Bonvanie stated “Marketing has had a fundamental shift within the last five years, Without a strong data background on the fundamentals, an

¹ Bill Schmarzo - BAIS Department Advisory Board Member and CTO of IOT and Analytics at Hitachi Ventura, www.linkedin.com/in/schmarzo
ability to understand and ask questions you will not make it on my team. I have 22 data
scientists and data analysts on my marketing staff. All asking questions on what happened and
what is happening and what will happen; asking and understanding trends and in some cases
automating the process by writing code to see what is next for Palo Alto Networks. This is the
foundation of the marketing team, If you don't have business analytics and data foundation you
will not be hired."2 Additionally, Doug Palmer - Principle at Deloitte Digital stated “Just a few
years ago i had access to data analyst at my disposal within Deloitte. If I had a need, I would
send it to the team, get on a call and then in a week or two get the data back and position it to
a customer. This long process will not work any longer, clients expect a more agile approach.
Now we are hiring associates out of college with a data background. Much more than basic
competency on excel. They need to have an in-depth knowledge of quantitative analysis. We
do have classes for this at Deloitte, but for us this is time to value, time to billable. Within the
next 5 years all my consultants will have a deep understanding around business analytics as
well as the businesses drives in order to get hired at Deloitte and have a career path to
partner.”3 We have met with and contact more Bay Area Executives to learn about their current
and future need for Business Analysts, as Richard Cramer stated, “With the rise of the internet,
every business will be a data business. Data is the new currency of business, and the ability to
capture, manage and gain insights from data using artificial intelligence and machine learning
will be the differentiator between businesses that thrive and those that fail. Individuals with
the ability to do this work are in short supply, and graduates who have been trained to
understand the language of data will be highly sought after in every sector of the economy.”4
Furthermore, Ehtisham Zaidi, stated, “Data engineers and business analysts are the new
unicorns; you just cannot find enough of them...”5

We thus propose a Major in BA with the objective of offering the knowledge, skills, and
attitudes specific to BA that students will find current, valuable, and enriching.

Business Analytics Program Learning Goals

Students in the Business Analytics Major will:
1. Learn to adapt analytical skills in different contexts.
2. Identify and describe complex business problems in terms of analytical models to
produce results for more efficient, data-driven decision-making.
3. Build analytical skill sets to effectively communicate with the data and analytics
community.

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4 Richard Cramer - Chief Healthcare Strategist at Informatica, www.linkedin.com/in/richardbcramer
5 Ehtisham Zaidi - Senior Director at Gartner, www.gartner.com/analyst/50724/Ehtisham-Zaidi
4. Identify, analyze, and address ethical issues in all functions of business.

**Business Analytics Program Learning Outcomes**

Students in the Business Analytics Major will develop the capacity to:

1. Identify, develop, and apply analytical frameworks for tactical or strategic business situations that require actionable insights.
2. Identify the challenges and underlying potential of structured and unstructured data for effective contextual decision-making and creative problem-solving.
3. Recognize ethical issues for reliable and credible analytical insights.
4. Communicate analytical results and actionable insights.

**Business Analytics Program Targeted Student Populations**

Students with an overall grade point average of 2.0 are eligible for acceptance into the program. Students shall achieve no less than a 2.0 GPA (A = 4.0) in the major at the time of graduation.

**Business Analytics Program Evaluation**

The Business Analytics’ program will seek a STEM degree classification from the University of San Francisco. The faculty will be scholarly active or professionally qualified to teach, conduct research, and render service, conforming to AACSB requirements and guidelines for accreditation.

**Business Analytics and Information Systems Department Competitive Edge**

The Business Analytics and Information Systems (BAIS) Department is tied to the Business Analytics industry. Bay Area analytics executives and firms teach in the department and recruit from our Business Analytics MBA concentration. They also work closely with the BAIS department to continually enhance the curriculum. Therefore, the program is uniquely equipped to respond to the rapid changes and growth in business and technology.

**Business and Data Ethics**

Every course in the program will encourage a conversation on the ethical considerations of industry while conducting and presenting analysis.

**Assessment Plan**

Indicate how each program-learning outcome will be assessed during the next 3 years.
## Business Analytics Program Curriculum and Prerequisites

<table>
<thead>
<tr>
<th>Business Administration Required Courses</th>
<th>Time</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Software</th>
</tr>
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<tbody>
<tr>
<td>BUS 204: Quantitative Business Analysis</td>
<td>Sophomore Fall</td>
<td>4</td>
<td>MATH 106 and (concurrent RHET 120 or RHET 126 or RHET 131 or RHET 195 or RHET 203 or RHET 205 or RHET 206 or RHET 208 or RHET 212 or RHET 214 or RHET 216 or RHET 250 or RHET 295 or RHET 304 or RHET 310 or RHET 320 or RHET 321 or RHET 323 or SII 120)</td>
<td>Microsoft Excel</td>
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<tr>
<td>BUS 205: Applied Business Technology</td>
<td>Sophomore Fall</td>
<td>2</td>
<td>BUS 204 or concurrent</td>
<td>Python</td>
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<tr>
<td>BUS 308: Systems in Organizations</td>
<td>Sophomore Spring</td>
<td>4</td>
<td>BUS 204</td>
<td>SQL, Visio/Lucid Chart, and Microsoft Project/Smart Sheet</td>
</tr>
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<table>
<thead>
<tr>
<th>Business Analytics Required Courses</th>
<th>Time</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 340: Data Visualization</td>
<td>Junior Fall</td>
<td>2</td>
<td>BUS 204</td>
<td>Tableau / SAP</td>
</tr>
<tr>
<td>BUS 3XXA: Data Wrangling and Digital Analytics</td>
<td>Junior Fall</td>
<td>4</td>
<td>BUS 340 Concurrent with BUS 340</td>
<td>Google Analytics <a href="https://analytics.google.com">https://analytics.google.com</a> Python – web scraping APIs for data collection</td>
</tr>
<tr>
<td>BUS 3XXB: Data Mining and Text Mining</td>
<td>Junior Spring or Senior Fall</td>
<td>4</td>
<td>BUS 3XXA</td>
<td>RapidMiner <a href="https://rapidminer.com">https://rapidminer.com</a></td>
</tr>
<tr>
<td>BUS 4XXA: Machine Learning</td>
<td>Junior Spring or Senior Fall</td>
<td>4</td>
<td>BUS 3XXB</td>
<td>Python or R</td>
</tr>
<tr>
<td>BUS 4XXB: Thinking Like a Data Scientist</td>
<td>Senior Spring</td>
<td>4</td>
<td>BUS 4XXA. Concurrent with BUS 4XXC.</td>
<td>Tableau, SAP, R, Python, SQL, Risk Solver Platform, RapidMiner, Google Analytics</td>
</tr>
<tr>
<td>BUS 4XXC: Analytics Immersion</td>
<td>Senior Spring</td>
<td>2</td>
<td>BUS 4XXA. Concurrent with BUS 4XXB.</td>
<td></td>
</tr>
</tbody>
</table>
Data Visualization (2 units)

Course Description
This course is an introduction to the principles and techniques for data visualization which is graphical depictions of data that can improve comprehension, communication, and decision making. This course will focus on teaching how combining existing and new sources of data with advanced analytics can power new business opportunities. Students will learn techniques, with a how-to guide that shows them how to leverage big data to drive business value.

We are living in an age of information overload. Large amounts of data are generated by humans, computers, and instruments, and much of the data are available on the Internet. Today’s big challenge is not about generating data sets, but how to analyze them. While looking at numbers and texts can provide insights, the enormous data size often makes this task impractical. One solution is to use data visualization tools to convert the numbers and texts into pictures or interactive visual presentations.

Another key element of this course to enable students to generate business insight: interpret analytical results in terms of a larger context, identify and prioritize issues, and cogently articulate business insights.

Software Requirements
- Tableau and Data Prep
- SAP Data Visualization

Course Overview
In this course, students will learn visual representation methods and techniques that increase the understanding of complex data and models. Emphasis will be placed on the identification of patterns, trends and differences from data sets across categories, space, and time using various Data Visualization applications.

Course Objectives and Learning Outcomes
At the end of this course, students should be able to:
1. Understand the principles of creating and evaluating effective data visualizations and its effect on decision making
2. Become familiar with software tools to create various data visualizations such as in-time charts
3. Familiar with the visualization techniques in major application areas as well as generating reports using dashboard
4. Acquire the skill to apply visualization techniques to a problem and its associated data set
5. Generation of business insight and managerial communication
Course Outline

- Week 1: Introduction to Big Data, Data Visualization, and the Big Data Business Mandate. Data Cleansing
- Weeks 2: Identifying “What’s Important?” to your organization/client.
- Weeks 3: Big data analysis and its effect on decision-making. Introduction to Data Calculation
- Weeks 4: Connect to data (Static and Dynamic). Familiarity with the visualization techniques in major application areas.
- Weeks 5: Intermediate Data Calculation and Programming. Advanced visualization
- Week 7: Creating dashboards and stories
Data Wrangling and Digital Analytics (4 units)

Course Description
Apply analytical tools to explore and analyze digital data from various digital platforms (web, mobile apps, social media, etc.) in order to understand the customer’s behavior and provide managerial actions and insights to improve performance and increase customer satisfaction.

Software Requirements
- Open source tools will be introduced the management and analysis of digital data.
- Google Analytics (https://analytics.google.com)
- Python – web scraping
- Working with APIs for data collection

Course Overview
This course is designed to equip students with knowledge and skills necessary for analyzing data from various digital platforms. Digital data is generated and collected from e-commerce platforms, mobile apps, internet browsers, etc. The analysis of digital data enable organizations to better understand the preferences and needs of their clients and customers.

Course Objectives and Learning Outcomes
At the end of this course, students should be able to:
1. Collect data from digital platforms.
3. Analyze data to provide managerial insights and actions.
4. Develop marketing campaigns and strategies based on the analysis of the digital data
5. Understand and predict customer behavior

Course Outline
- Week 1: Introduction to digital analytics and platforms
- Weeks 2-3: Analytical techniques for digital platforms
- Weeks 3-6: Social media (social) analytics – Twitter
- Weeks 7-11: Search engine optimization (SEO)
- Weeks12-13: Web analytics and data reporting
- Week 14: Test, run, and measure marketing campaigns
- Week 15: Project deliverables
Machine Learning (4 units)

Course Description
Python-based approach to machine learning that focuses on the ability of a machine to learn without being explicitly programmed for one or more business functions that are operational or strategic in nature. Learn algorithms and approaches in a project-based environment to handle large systems that utilize supervised and unsupervised learning methods, Bayesian learning, randomized search algorithms, and reinforcement learning.

Software Requirements
Python and/or R

Course Overview
This course is for developing advanced and functional skills necessary to analyze data for complex operational and strategic decision-making. From tactical supply chain decisions of procurement and movement of goods to marketing decisions like target geographies and financial allocations, the course will cover a spectrum of analyses that are data driven.

Course Objectives and Learning Outcomes
At the end of this course, students should be able to:
1. Develop a conceptual comprehension on a broad range of approaches and techniques concerning machine learning. This will be built through practical and hands-on exercises.
2. Think and apply the techniques learnt on various business problems.
3. Cultivate programming and design skills to support smart and adaptive machine learning models built.
4. Advance abilities to move past the known and conventional techniques in this area and improve upon models to cater to specific business questions.

Course Outline
- Week 1-3: Data preparation and exploration
- Weeks 4-7: Classification and segmentation
- Weeks 8-10: Clustering
- Weeks 11-13: Combination of classification and clustering algorithms
- Weeks 14: Advanced visualizations
- Week 15: Final project
Data Mining and Text mining (4 units)

Course Description
In this course students learn how to analyze unstructured textual data to gain managerial insights. The important part of the data generated or used by any organization is unstructured. The unstructured data that is not tabular or numeric, require unique analytical approaches and techniques. The unstructured data (such as online reviews, emails, social media posts, and claim forms) contain valuable information for the organizations that allows them to give voice to the customers and detect anomalies. Students in this class develop skills and learn techniques that are used to prepare and analyze textual data in order to identify patterns, anomalies, sentiment, insights, risks, and opportunities.

Software Requirements
RapidMiner\(^6\) (https://rapidminer.com/) – or similar open source tools (R and/or Python)

Course Overview
This course is designed to introduce analytical techniques that can be applied to the data that is inherently unstructured. The following major topics will be discussed in the class: 1) keyword extraction, 2) classification and clustering, 3) anomaly and trend detection, and 4) text streams. Students will be introduced to different types of unstructured data and will use unique techniques and approaches to analyze them. Students will learn how to examine attitudes of the customers towards brands, products and services from what is said in social media. Case studies from finance, healthcare, and the retail industry will be used to demonstrate the applications of text mining. Students should be familiar with basic statistical techniques and principles.

Course Objectives and Learning Outcomes
At the end of the class, students should be able to:
1. Extract and prepare textual documents and files for text analytics
2. Define and extract keywords in the textual data
3. Conduct sentiment analysis
4. Perform clustering and classification methods to identify text patterns
5. Identify anomalies and biases
6. Develop strategies based on patterns, anomalies, and sentiment identified in the unstructured data

Course Outline
- Week 1: Introduction to text mining theories and principles
- Weeks 2-3: Text mining applications
- Weeks 3-6: Text data preparation
- Weeks 7-11: Text clustering and categorization
- Weeks 12-13: Topic modeling and sentiment analysis
- Weeks 14: Text data visualization
- Week 15: Project deliverables

Thinking Like a Data Scientist (4 units)

Course Description
We sit at an unprecedented point in history where the collision of massive data sets (fueled by web applications, social media, mobile devices and the Internet of Things), dramatically falling storage and computing costs, and availability of advanced open source data management and advanced analytics software is enabling organizations leverage big data and machine learning / deep learning / artificial intelligence. As a result, companies of all sizes in virtually every industry are engaged in figuring out how to use data, models, and systems to optimize key operational and business processes, mitigate compliance and security risks, uncover new monetization opportunities, and create differentiated, more compelling user experiences. These capabilities have democratized advanced analytics, and are enabling organizations to create value by exploiting digital assets that continue to grow, do not wear out, and can be used simultaneously across multiple business and operational use cases at near zero marginal cost.

Big data, advanced analytics and the emergence of smart entities and intelligent applications is driving digital transformation, but digital transformation is much more than just about repurposing existing applications into a cloud-native environment. So the most fundamental question with which all organizations are struggling today is “How effective are we at leveraging data and analytics to power our business models?”

Software Requirements
Tableau, SAP, R, Python, SQL, Risk Solver Platform, and RapidMiner

Course Overview
Throughout this course, student learning will take place through a wide variety of different experiences, including lectures, presentations, hands-on exercises, workshops, simulations, and faculty coaching.

Course Objectives and Learning Outcomes
At the end of this course, students should be able to:
1. Help organizations become more effective at leveraging data and analytics to power the business
2. Understand basic and advanced data science concepts and techniques
3. Engage in discussions about Machine Learning, Deep Learning and Artificial Intelligence concepts and capabilities
4. “Think like a data scientist” in order to contribute to and lead data science and deep analytics projects
5. Quantify the economic value of data
6. Leverage data and analytic assets to drive an organization’s digital business model transformation
Course Outline

- Week 1: Introduction to the course
- Weeks 2: Review of the data science paradigm
- Week 3: Data Scientist vs. Business Analysts
- Week 4: Creating Smart Entities
- Week 5: Thinking like a data scientist
- Week 6-7: IOT Analytics Architecture
- Week 8-9: Digital Transformation
- Week 10-11: Design Thinking Concepts
- Week 12-13: Data Science technology
- Week 14-15: Consulting Project
Business Analytics Immersion (2 units)

Course Description
This course includes 6 visits to companies in the Bay Area or international companies centered on onsite engagement with approximately 6 companies that are using big data to achieve a business advantage. This course is designed to enhance and extend the content in the business analytics major. We will use a combination of case studies and hands-on projects to give you experience in identifying opportunities for leveraging data to support, make, and implement decisions. We will also provide an overview of the key engineering tools used for working with business analytics, providing an introduction to some of the core projects used for both real-time data processing.

The Business Analytics Immersion introduces you to how analytics frames the decisions in business environments across industry domains. Students will learn how managers, with diverse analytics backgrounds, harness big data to inform decision-making.

Software Requirements
Word Processing Data Analytics and Visualization software applications are required.

Course Overview
Classes prior to the company visit include student prepared presentations on companies who use data to drive insight, in addition to the company history, business customs, cultural values, as well as on various political, socioeconomic and technological factors in the Bay Area or international companies. Furthermore, students will be prepared on business communication etiquette and communication style prior to each company visit. Faculty might also engage film presentations/discussion, guest speakers and other resources. Deliverables at the end of the course include a reflection of each company we visit and a final research paper designed to enrich discussion during the last class which will take a place on the last day of classes. The course also includes an in-depth look at companies’ profile that will be visited during the course.

Course Objectives and Learning Outcomes
At the end of this course, students should have:
1. Understanding of business analytics companies’ use of data analysis and its applicability to various industries
2. Critical Thinking and its place in quantitative analysis by framing the question(s) needed by the business, that will then drive the data requirements
3. Understanding of the use of data by executives to make sound business decisions for future growth
4. Cross-cultural communication skills to work effectively in a different culture
5. Understanding of the broad environmental dynamics and business trends that affect developing economies, including the challenges in diversifying a society and economy
6. Ability to discuss the globalization of commerce and the challenges of operating in the USA and in a global environment

Course Outline

- Week 1: Introduction to the course and Group Research Paper Assignment
- Weeks 2: Company Visit 1 and debrief
- Week 3: Company Visit 2 and debrief
- Week 4: Company Visit 3 and debrief
- Week 5: Company Visit 4 and debrief
- Week 6: Company Visit 5 and debrief
- Week 7: Individual students’ presentation and course wrap up
## BUAN Program Curriculum Map

### Sophomore

<table>
<thead>
<tr>
<th>Fall</th>
<th>Intersession</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
</table>
| BUS 204 (4)  
Quantitative Business Analysis | | BUS 308 (4)  
Systems in Organizations | BUS 204 (4)  
Quantitative Business Analysis |
| BUS 205 (2)  
Applied Business Technology | | BUS 340 (2)  
Data Visualization | BUS 308 (4)  
Systems in Organizations |

### Junior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Intersession</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
</table>
| BUS 3XXA (4)  
Data Wrangling and Digital Analytics | | BUS 3XXB (4)  
Data Mining and Text Mining | |
| BUS 340 (2)  
Data Visualization | | BUS 4XXA (4)  
Machine Learning | |

### Senior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Intersession</th>
<th>Spring</th>
<th>Summer</th>
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</thead>
</table>
| BUS 4XXB (4)  
Thinking Like a Data | | BUS 4XXC (2)  
Analytics Immersion | |
| BUS 4XXA (4)  
Machine Learning | | BUS 4XXB (4)  
Thinking Like a Data | |

Last updated 5/9/2019

Note: BUS 204, 205 & 308 will be offered every semester (Fall, Spring & Summer)

May be offered multiple times

A major course may be offered if there is urgent need for students to graduate on time
BAIS Faculty Vote & Approval

1. From: Vijay Mehrotra <vmehrotra@usfca.edu>
   Sent: Monday, March 18, 2019 10:13 AM
   To: Stephen J Huxley <huxleys@usfca.edu>
   Cc: Mouwafac M Sidaoui <sidaoui@usfca.edu>; Thomas A Grossman <tagrossman@usfca.edu>; Joel Lee Oberstone <joel@usfca.edu>; Majid Dadgar <mdadgar@usfca.edu>; Shivani G. Shukla <sgshukla@usfca.edu>; Longyuan Du <ldu5@usfca.edu>; Muhammad Al-Abdullah <malabdullah@usfca.edu>
   Subject: Re: BUAN, UG Business Analytics Major, Proposal v08

   I vote to approve.

2. From: Shivani G. Shukla <sgshukla@usfca.edu>
   Sent: Monday, March 18, 2019 12:01 PM
   To: Mouwafac M Sidaoui <sidaoui@usfca.edu>
   Cc: Thomas A Grossman <tagrossman@usfca.edu>; Stephen J Huxley <huxleys@usfca.edu>; Joel Lee Oberstone <joel@usfca.edu>; Vijay Mehrotra <vmehrotra@usfca.edu>; Majid Dadgar <mdadgar@usfca.edu>; Longyuan Du <ldu5@usfca.edu>; Muhammad Al-Abdullah <malabdullah@usfca.edu>
   Subject: Re: BUAN, UG Business Analytics Major, Proposal v08

   I vote yes.

3. From: Longyuan Du <ldu5@usfca.edu>
   Sent: Monday, March 18, 2019 12:05 PM
   To: Mouwafac M Sidaoui <sidaoui@usfca.edu>
   Cc: Thomas A Grossman <tagrossman@usfca.edu>; Stephen J Huxley <huxleys@usfca.edu>; Joel Lee Oberstone <joel@usfca.edu>; Vijay Mehrotra <vmehrotra@usfca.edu>; Majid Dadgar <mdadgar@usfca.edu>; Shivani G. Shukla <sgshukla@usfca.edu>; Muhammad Al-Abdullah <malabdullah@usfca.edu>
   Subject: Re: BUAN, UG Business Analytics Major, Proposal v08

   I also vote YES!

   Thanks,
   Longyuan

4. From: Mouwafac Sidaoui <sidaoui@usfca.edu>
   Sent: Monday, March 18, 2019 1:12 PM
   To: Longyuan Du <ldu5@usfca.edu>
   Cc: Thomas A Grossman <tagrossman@usfca.edu>; Stephen J Huxley <huxleys@usfca.edu>; Joel Lee Oberstone <joel@usfca.edu>; Vijay Mehrotra <vmehrotra@usfca.edu>; Majid Dadgar <mdadgar@usfca.edu>; Shivani G. Shukla <sgshukla@usfca.edu>; Muhammad Al-Abdullah <malabdullah@usfca.edu>
   Subject: Re: BUAN, UG Business Analytics Major, Proposal v08

   I add my vote to the yessss

5. From: Majid Dadgar <mdadgar@usfca.edu>
   Sent: Monday, March 18, 2019 1:02 PM
   To: Longyuan Du <ldu5@usfca.edu>
   Cc: Mouwafac M Sidaoui <sidaoui@usfca.edu>; Thomas A Grossman <tagrossman@usfca.edu>; Stephen J Huxley <huxleys@usfca.edu>; Joel Lee Oberstone <joel@usfca.edu>; Vijay Mehrotra <vmehrotra@usfca.edu>; Shivani G. Shukla <sgshukla@usfca.edu>; Muhammad Al-Abdullah <malabdullah@usfca.edu>
   Subject: Re: BUAN, UG Business Analytics Major, Proposal v08

   My vote is YES!
6. From: Stephen J Huxley <huxleys@usfca.edu>
   Sent: Monday, March 18, 2019 1:10 PM
   To: Majid Dadgar <mdadgar@usfca.edu>
   Cc: Longyuan Du <ldu5@usfca.edu>; Mouwafac M Sidaoui <sidaoui@usfca.edu>; Thomas A Grossman <tagrossman@usfca.edu>; Joel Lee Oberstone <joel@usfca.edu>; Vijay Mehrotra <vmehrotra@usfca.edu>; Shivani G. Shukla <sgshukla@usfca.edu>; Muhammad Al-Abdullah <malabdullah@usfca.edu>
   Subject: Re: BUAN, UG Business Analytics Major, Proposal v08

   I vote yes, but the issues and typo corrections I raised in my proof reading of the proposal will have to be done before being presented to the UPC. Whoever has the original document will need to do that. If I can mail it out to the UPC members at least a week before the April 10 meeting - the sooner the better - we might possibly get a vote on April 10. Can you be there Mouwafac?
   Steve

7. From: Joel <joel@usfca.edu>
   Sent: Monday, March 18, 2019 7:13 PM
   To: Mouwafac Sidaoui <sidaoui@usfca.edu>
   Subject: Re: BUAN, UG Business Analytics Major, Proposal v08

👍

8. From: Thomas A Grossman <tagrossman@usfca.edu>
   Sent: Monday, March 18, 2019 10:25 PM
   To: Mouwafac Sidaoui <sidaoui@usfca.edu>
   Cc: Longyuan Du <ldu5@usfca.edu>; Stephen J Huxley <huxleys@usfca.edu>; Joel Lee Oberstone <joel@usfca.edu>; Vijay Mehrotra <vmehrotra@usfca.edu>; Majid Dadgar <mdadgar@usfca.edu>; Shivani G. Shukla <sgshukla@usfca.edu>; Muhammad Al-Abdullah <malabdullah@usfca.edu>
   Subject: Re: BUAN, UG Business Analytics Major, Proposal v08

   Yes!