

**Accounting Disciplinary Task Force  
Phase I Report of the  
MaCuDE Project<sup>1</sup>**

**Report on the Current State of  
Curricula in Accounting**

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<sup>1</sup> The MaCuDE project is sponsored by AACSB International and led by Stevens Institute of Technology

**Report on Current State of Curricula in Accounting  
Developing the Management Curriculum for the Digital Era (MaCuDE)**

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## I. Introduction

In 2020, 78% of organizations surveyed reported that they had implemented some form of robotic process automation and 16% of others reported that they intend this implementation to occur over the next 3 years.<sup>2</sup> Unless we conclude incorrectly that these disruptions are occurring among lower skilled jobs, a recent article published in the New York Times stated that professions requiring college degrees are four times more likely to be exposed to the risk of an artificial intelligence disturbance than are those requiring a high school diploma.<sup>3</sup> This reality amplifies the urgency for business schools to examine how our curricula is preparing students for a world that is increasingly being modified through the integration of technology and data.

In the field of public accounting, much of the work done by 1<sup>st</sup> and 2<sup>nd</sup> year associates 20 years ago has been automated, outsourced, and/or is being conducted by para professionals. Newly hired employees in public accounting are doing work that is similar to what was performed by 3<sup>rd</sup> and 4<sup>th</sup> year associates from two decades ago. Additionally, the demand for data scientist within the profession is on the rise, displacing in some instances the demand for accountants. Not only has the profession of accounting become more complex due to globalization, regulation and the emergence of new industries; it has been reimagined with the evolution of automation, analytics and access to large quantities of data. The need for foundational knowledge within accounting, including tax regulations, financial reporting standards and internal control processes and procedures has declined as large portions of this information has been programmed into automated systems. In contrast the demand for higher order thinking skills and fluency around the use, management, and creation of technological systems is on the rise.

The purpose of the Management Curriculum for the Digital Era (MaCuDe) is to recommend a state-of-the-art curriculum for global programs in School of Business. To this end, the Accounting Task Force has examined the accounting curriculum of both undergraduate and graduate programs within the discipline. This examination includes course names, topical area and content. We have also examined the curriculum of schools that offer unique programs representing a strong integration of digital perspectives, tools and applications. The goal of this phase is to understand the digital skills that typical accounting programs contain as well as highlight programs that offer differential exposure to digital technology in preparing students for careers in accounting.

In Phase I of our investigative process, we assess the current state of the accounting curriculum through surveying schools that make up our Task Force as well as others from across the globe. We pay special attention to where and how technology and analytics live and are delivered within the existing curriculum. Our findings are summarized in this document.

Additionally, we provide a brief history of the discipline of accounting to demonstrate its durability as a foundational component of commerce across the arc of human existence. We also detail the certification landscape in accounting. The vast majority of these certifications require a specific set of educational content the serve as guardrails to the curriculum as students frequently aspire toward their attainment. The notion of credentialing in the area of accounting has been approached differently around the globe. In

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<sup>2</sup> <https://www2.deloitte.com/us/en/insights/focus/technology-and-the-future-of-work/intelligent-automation-2020-survey-results.html>

<sup>3</sup> <https://www.nytimes.com/2021/03/06/business/the-robots-are-coming-for-phil-in-accounting.html>

particular Accounting is a common business major in North America; however, that is not the case globally. While bachelor degrees in Europe do exist, they are substantially less common than elsewhere.

## **II. History of Accounting**

Accounting as a discipline that traces its roots back to Mesopotamia. While it has evolved through time, it was the contribution of double-entry bookkeeping by Muhammad ibn Musa al-Khwarizmi in the 9<sup>th</sup> century which was popularized in a text written by Luca Pacioli that revolutionized the field. Double entry bookkeeping—debits/credits, real accounts and nominal accounts—are the foundational techniques of the discipline.

Like all professions, Accounting has evolved and is frequently referred to as the language of business. As commerce has become increasingly complex with the expansion of who is a stakeholder—employees, shareholders, governments, taxing authorities, regulations, etc. the profession has evolved. Accountants of today operate through the paradigm of double entry bookkeeping to record, measure and organize the operations of entities using a set of agreed upon methodologies and standards.

## **III. Accounting Credentials and Certifications**

In most of the world, there are one or more acceptable certifications that require a well-defined educational portfolio, a written examination and a duration of work experience to obtain. Globally, the designation of Chartered Certified Accountant (CA) is widely accepted. In the United States, the CPA—Certified Public Accounting credential is the equivalent. These designations allow the holder to certify that a set of audited financial statements are free from material error and prepared under a specific set of standards. Additionally, holders of these licenses engage in a wide array of professional tracks.<sup>4</sup> While there are other certifications that are made available to those in the accounting profession—Chartered Financial Analyst, Certified International Financial Accountant, Chartered Global Management Accountant, Certified Internal Auditor, Certified Fraud Examiner, etc.—the CA/CPA are judged to be the most desirable baseline credentials.

Due to the certification obtainment within the Accounting profession, the course work in accounting programs from around the world have evolved to provide students with the education required by examining bodies. There is an expectation that the undergraduate degree will provide students with what is needed to be successful on the CA/CPA examinations, as such, there is substantially less variation in accounting programs than one might otherwise expect.

### *Charter Accountant*

The regulatory bodies for the CA differ from country to country as do the educational and work requirements. At a minimum, the following is required:

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<sup>4</sup>Internal Auditing, Tax Auditing Forensic Auditing, Career in Accounting and Finance, Taxation Advisory (Both Direct and Indirect), Statutory Audit under applicable statutes, Managing Treasury function, etc.

- Have educational or professional experience (on the job training can replace education in some locals)
- Age requirement
- 3-5 years of qualified work experience to be approved by the regulatory body

On average, to sit for the CA, applicants need the equivalent of five years of education and 2-3 years of work experience to receive licensure. The CA has three levels of testing—Certificate level, Professional stage and Advance stage. The Certificate level examination consists of six modules—accounting, assurance, business technology, law, management information and principles of taxation. The Professional stage requires 6 written papers on different accounting topics. The Advance stage requires 2 integral papers and a case study that is relevant to the industry. Many of the approved university programs will exempt candidates for 12 of the modules for licensure. In order to maintain licensure, a CA may be required to complete continual education.

### *Certified Public Accountant (CPA)*

The CPA is the US's most popular credential for accountants to receive. The national requirements to become a CPA include:

- 150 semester units of post-secondary education
- One year of accounting related work experience
- Passing the Uniform CPA Examination

The content of the 150 credit hours and the number of years of work experience varies state to state. Additionally, there may be a residency requirement to sit in a particular state. The CPA exam consist of four sections—Auditing and attestation, Business environment and concepts, Financial accounting and reporting, and Regulation. A minimum score of 75 out of 90 is required on each section. Active CPAs are required to complete 40 hours of continual education per year including a minimum of 4 hours of ethics. The American Institute of CPAs which is the credential regulator has published a blueprint of plans to augment the coverage of analytics on the CPA exam to 1/3 (See Appendix A.)

## **IV. Data Collection**

### *4.1 Data Collection*

In collecting data on curriculum we created a pool from which to select 30 global schools for evaluation. We began by selecting the top 50 business global MBA programs per the *Financial Times* ranking for 2020 and added schools from the MBA rankings published by *The Economists* and *US News*. To ensure representation from all regions, we supplemented with schools from around the globe. In total we captured 95 universities and colleges as our initial pool. After examining the degree offerings of each of these schools, we found that 29%/30.5% (22%/23.1%) of them did not offer an undergraduate (graduate) degree in Accounting.<sup>5</sup> 20 of the 95 universities do not offer a degree of any kind in Accounting. Bachelor degrees in Accounting are common in North America and are less common across the globe. In particular, Accounting is viewed more as a trade throughout Europe and less as a profession. As a result there are

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<sup>5</sup> By region, the Universities that do not offer an undergraduate/graduate degree in Accounting are distributed as Africa (1/2), Asia (9/8), Europe (11/7), and North America (8/5).

fewer programs within specific regions and countries. From the remaining pool of schools with degrees in accounting, we selected 30 to collect detailed curricular information from. The results from this examination are reported in Section V of this report.

Capturing programmatic curriculum may result in losing the richness of individual course content. To provide context to what may seem to be a course of study that has little digital content, we circulated a survey to approximately 100 accounting programs to collect more detailed information. We asked accounting program directors to tell us about the digital related instruction included in their program within standalone courses or embedded within traditional courses. Additionally, we collected details on the pedagogical approach used to teach and evaluate this content. The findings from the survey are reported in Section VI of this report.

## V. Accounting Curriculum Content

### 5.2 Undergraduate Program Curriculum

Many business programs consist of three types of courses, those that are common to all business majors (core), unique to a particular major (required), and those that are optional (electives). Below is a summary of the core required courses for our sample of programs.

**Table 1: Percentage of Core Required Business Content for Undergraduate Accounting Programs by Topic**

Topical Coverage	Percent of Sample
Accounting	100%
Economics	70%
Finance	70%
Information Systems	47%
Management	37%
Statistics	60%
Strategy	30%
OB/Leadership	37%
Marketing	60%
Ethics	23%
Business Law	17%

The core business courses tend to offer a general business foundation from which students are able to specialize. The academic core of a typical undergraduate program in business includes the following content most frequently:

**Accounting** – This is generally a two part course sequence consisting of a principles of financial accounting and a managerial course. Both courses cover measurement, recording, reporting, analyzing, and interpreting financial information. Financial accounting does this primarily for an external audience while managerial accounting focuses on internal audiences.

Economics – This is generally a two part course sequence that includes both micro and macroeconomics. Micro economics tends to focus on the business decisions of individuals around the allocating of scarce resources in the presence of frictions. Macroeconomics examines similar topics across aggregated groups of individuals such as countries or industries and economic metrics such as growth, inflation, etc. across the economy.

Finance – Focuses on the role and functioning of financial markets. Of particular interest is how information is priced and incorporated into decision making.

Information Systems – Delves into how information is created, sorted, stored and moved through and across organizations.

Management – Reviews how to plan, lead, control and evaluate the work of individuals through organizational structures.

Marketing - Considers the strategic process of positioning a good or service to attract and retain customers.

OB/Leadership – Narrowly unpacks how to understand, predict, influence and manage the behavior of individuals and groups within an organization.

Statistics – a process of collecting, sorting and analyzing data to answer questions that considers probabilities.

The Accounting courses required in the business core for our sample of school generally is a two course sequence covering both financial and managerial accounting. For the Accounting major itself, the topical areas detailed below are for courses that are required for the major which are above and beyond the core requirements for all business majors. Financial, managerial, auditing and tax are the most frequently required topical course, respectively. Financial, managerial, tax, auditing and information systems are the most frequently offered elective courses, respectively.

**Table 2: Percentage of Undergraduate Accounting Major Program Requirements and Electives by Topic**

Topic	Requirements	Electives
Financial Accounting	100%	100%
Managerial/Cost Accounting	93%	53%
Information Systems	53%	23%
Auditing	63%	23%
Tax	47%	53%
Ethics	23%	13%

The required courses for the Accounting major delve deeper into the topics of financial and managerial accounting, information systems and cover the following topical areas:

Auditing – teaches on the professional responsibilities of auditors, risk assessment, the underlying theory of and process to review financial statements for material errors and render an opinion.

Tax – examines the governmental structure and rules of taxation for varying entities including individuals, nonprofits, corporations, partnerships, etc.

Across the Accounting programs in our sample, we identified five categories of standalone digital content courses by topical area.

**Table 3: Percentage of Undergraduate Accounting Major Program Requirements and Electives with a Digital Content Focus by Topic**

Topic	Required	Electives
Accounting/ Business Analytics	17%	17%
Artificial Intelligence		7%
Data Management and Manipulation	20%	20%
Modeling	27%	13%
Software/Programming	7%	13%

The detail coverage within each of these topical areas varies. In the area of accounting and business analytics, the courses tended to focus on acquiring the skills needed to examine data and tell a compelling story within a specific business or accounting context. Data management and manipulation courses teach data science type skills rather than analytics. Modelling classes focused primarily on decision modeling, visualization and predictive modeling, and financial modeling. Software/programming coursework covered statistical packages, programming languages (e.g. Python) and/or programs (mobile applications) that are frequently used within the area of accounting.

### *5.3 Innovative Undergraduate Curriculum in Accounting*

Several unique programs and courses were noted within the curriculums we reviewed. The University of Hong Kong includes [Introduction to Business Programming in Python](#) and [Data Driven Business Modeling](#) within their core and offers [Mobil Applications for Business](#) and [Big Data Management](#) as accounting electives. University of Iowa is one of the few accounting programs in the United States that has a [Foundations of Business Analytics](#) course in its core curriculum. Similarly, the University of Johannesburg requires a course in [Informatics](#). The University of Ottawa offers elective courses titled [Auditing in a Digital Environment](#) and [Business Analytics](#) demonstrating how digital competencies can be introduced into curriculums through optional courses.

Nanyang Technological University offers a [Minor in Digitalization](#) as a compliment to their Accounting Degree. St Mary's University offers a degree in [Accounting and Data Analytics](#) which includes courses in Business Intelligence, Financial Modeling, Python for Business Analytics, and Database Management. Undergraduate programs that fully integrate digital tools across the curriculum are rare. Most schools imbed these competencies within existing courses that are common to bachelor degrees in accounting (See Section VI).



### 5.4 Graduate Program Curriculum

Graduate programs in Accounting originally were developed to serve populations of students who did not have undergraduate degrees in accounting. However, with the demand for 150 hours of education in the U.S. to sit for the CPA exam and for increasing educational requirements around the globe, most universities that offer an undergraduate degree in Accounting also provide a masters degree program as well. In our sample of programs, 3 (6) of the 95 schools offer a bachelor (master) degree in accounting and not a master (bachelor) degree. Similar to most one year masters degrees, the Masters of Science degree in Accounting is most typically a one year program that has a heavy emphasis on accounting specific courses. In examining the curriculums of our sample schools, Communication/Professional Development courses were the most frequent non accounting related courses required.

**Table 4: Percentage of General Business Content for Graduate Accounting Programs by Topic**

Topic	Required	Electives
Business Law	20%	13%
Communications/Professional Development	57%	0%
Governance	13%	20%

Business Law – Introduction to the legal matters related to organizational structure, contract law, tort law, employment law, dispute resolution and business ethics.

Governance – An examination of organizational stakeholders and how organizational power and decision making is shared between firm management, boards of directors, shareholders and others.

The accounting course requirements for Masters of Accounting Programs mirror those that are in the undergraduate course sequence in terms of topical area. Graduate courses are more advance covering subject matters at a deeper and more nuanced level or focusing on a particular industry, transaction type or operational form.

**Table 5: Percentage of Graduate Accounting Program Requirements and Electives by Topic**

Topic	Requirements	Electives
Financial Accounting	100%	63%
Managerial/Cost Accounting	30%	20%
Information Systems	47%	23%
Auditing	67%	33%
Tax	80%	37%
Ethics	13%	10%

Financial Accounting, Tax and Auditing have the widest coverage in graduate programs in accounting. This content is reflective of course requirements to sit for the accounting certifications.

Digital content in the form of standalone coursework was present in 67% of the schools in our sample. The topical focus of those courses varies with the most common as a requirement or an elective being in the area of accounting/business analytics. Courses on data management, modeling and programming tended to be part of degree programs that had been designed with a focus on analytics.

**Table 6: Percentage of Graduate Accounting Program Requirements and Electives with a Digital Content Focus by Topic**

Topic	Required	Electives
Accounting/ Business Analytics	37%	13%
Data Management and Manipulation	20%	3%
Modeling	20%	10%
Programming	10%	3%

#### *4.5 Innovative Courses & Curriculum*

Masters of Accounting programs that have an analytics focus have become increasingly popular in the US in recognition of the increased demands for digital fluency in the field of accounting. In this section, we highlight some of the more innovative programs that were in our sample of schools.

Indiana University offers a Masters of Accounting Analytics. The typical courses enabling participants to qualify for the CPA examination are included in the program. However, there are three required courses which are focused on Digital content; [Intro to Spreadsheet Modeling](#), [Predictive Analytics/Data Mining](#), and [Enterprise Data Management](#). Courses of this type are available as electives across many programs; however, they tend to be requirements in programs focused on Accounting Analytics. Digital courses in accounting have not yet become core expectations in the discipline.

Over the last 5 years, or so, KPMG has partnered with 9 business schools to develop and offer the [KPMG Masters of Accounting with Data & Analytics](#) which includes both an audit and tax track.<sup>6</sup> The course work includes the typical accounting content as well as:

- Data Analysis and Visualization
- Systems for Data Analytics
- Auditing through Information Systems
- Probability, Uncertainty and Statistical Decision Making
- Auditing with Automated Audit Procedures
- Innovation, Emerging D&A and Cognitive Technologies
- The future of Data and Analytics in the Tax Practice
- Data Mining for Business Intelligence

<sup>6</sup> [Arizona State University](#), Baylor University, [Ohio State University](#), [University of Georgia](#), [University of Mississippi](#), University of Missouri, [University of Southern California](#), [Villanova University](#), and [Virginia Tech University](#).

- Fraudulent Financial Reporting

These programs tend to be lockstep in their design with a heavy focus on integrating Data and Analytics with the common accounting courses. [Villanova University](#) was one of the original programs and its curriculum is representative of the typical design of the KPMG Masters Degree. This partnership between KPMG has not only produced the degree programs mentioned, but has influenced the course content in accounting programs more broadly.

The Masters of Accounting Analytics that operates at the [University of Southern California](#) is a KPMG related program; however, it has been developed by a retired KPMG partner, John Owen who serves as program director. In our interview with Professor Owen, he noted that the goal of this program is not to teach data analytics, but to teach auditing. The program is keenly focused on teaching the discipline of accounting first and then the appropriate analytic tools to support the work. This program is particularly hands on in that most of the classes have an experiential component with a publicly traded company and auditors. The students experience a series of live cases where they use the analytic skills they have acquired to practice being audit professionals. In our programmatic review, this program stood out as unique. Rather than teaching digital skills as an add on, it integrated these tools into the discipline focused course content in a way that makes them complimentary to the study of accounting.

## **VI. Survey on Digital Skills in Accounting Curricular**

Digital content most typically appears in accounting curriculums in the form of information technology and data analytics. Information technology has been an integral part of Accounting programs for decades as computer systems are used store and record financial transactions. As a discipline, Accounting Information Systems and related areas of specializations are common.

To better understand how digital skills are being integrated into accounting curriculums, we surveyed 35 programs from around the world. The majority of undergraduate programs (57%) have embedded digital skill acquisition into multiple courses while 32% provide this instruction in a standalone class. When embedded within existing courses, the content is most frequently included in Information Systems and Auditing courses. However, this content is also distributed across tax, advanced accounting and managerial classes. The products and topics that are most frequently included are Alteryx, data visualization software, textual analysis and modeling in excel.

Within the undergraduate curriculum, digital content is most frequently embedded in Intermediate Accounting I and Auditing at equal rates, followed by Managerial/Cost Accounting and Accounting Information Systems equally, and less frequently in Intermediate Accounting II and Advanced Accounting.

The most common software used in the undergraduate course work are Excel (60.92%) and Tableau (26.4%). Other software programs that are found within undergraduate degrees include Microsoft Power BI, Automation Anywhere, Automate RPA, ERPsim, Microsoft dynamics, SAP cloud analytics, Tax Software, IDEA, SAP predictive analytics, Alteryx

Within the graduate curriculum, digital content is most frequently embedded in Accounting Information Systems followed by Auditing and then Managerial/Cost Accounting and Advanced Accounting. The most common software used in the undergraduate course work are Excel (55.17%) and Tableau (27.59%). Alteryx was the sole additional software that is used in graduate programs.

The vast majority of undergraduate programs embed digital content across multiple courses (54.55%) while most graduate programs teach digital content within a single standalone course (40%).

**Table 7: Evaluation of Digital Content in Accounting Curriculums**

How is Digital Content Embedded in the Curriculum		
	Undergraduate	Graduate
Digital content is taught in one course	18.18%	40.00%
Digital content is taught across multiple courses	54.55%	20.00%
We do not teach digital content	9.09%	6.67%

The most commonly employed pedagogical methodologies used in undergraduate programs to instruct digital content are lecture, case method and flipped classrooms. The same is true in graduate programs, with case method leading the way. The ethical implications of digital content in the practice of accounting is part of both undergraduate (75%) and graduate (83.33%) curriculums in accounting.

## 6.2 Demographics of Responders

### *Programs Offered*

Undergraduate degrees in accounting 80%

Minor in accounting 16%

Master's degree in accounting 72%

Doctorate in accounting 32%

### *Accreditation*

90.91% of our survey respondents have accredited programs.

### *Research/Teaching Intensive*

Research intensive 11.11%

Teaching intensive 33.33%

Research/Teaching balance 55.56%

62.5% are state affiliated programs.

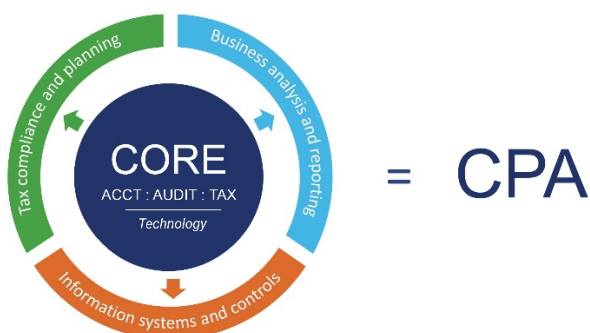
Our sample represents Universities from the United States, United Kingdom and India.

## **VII. Key Findings and Takeaways**

1. Digital transformation has profoundly affected the field of accounting in both the audit space as well as professional accountants. This has resulted in programmatic changes championed by employers such as KPMG as well as credentialing bodies like the AICPA (See Appendix A). The benefit of these collaborations is that business schools are gaining clarity on what can be removed or augmented in the curriculum to provide students with the educational experiences they need to be successful in a digital age.
2. We found that approximately 1/3 of accounting program require specific coursework focused on digital content as currently defined. The vast majority of accounting programs contain information technology courses.
3. Digital content in Accounting is primarily comprised of managing and manipulating large data sets, applying analytics tools to answer questions and tell a story, and understanding automation of accounting functions.
4. Digital content in undergraduate accounting programs is most typically embedded within traditional accounting courses across the curriculum. In masters programs that are not braded as analytics programs, this content is usually contained within one standalone course.
5. Coursework in accounting programs is heavily influenced by the professional certifications attached to the profession of accounting. The planned changes to the CPA exam are delineated in Appendix A and are expected to result in a significant overhaul in both undergraduate and graduate Accounting curriculums in the area of analytics

## Appendix A. AICPA Exposure Draft on Analytics and Technology

In 2019, the American Institute of Certified Public Accountants (AICPA) issued an exposure draft delineating the impact of analytics and technology on the role of newly licensed CPAs. Originally, there was a plan to update the CPA Exam Blueprints which are used to communicate exam content by December of 2020. July of 2022 is the new target date for the draft Blueprint. In parallel, the AICPA began working with the National Association of State Boards (NASBA) on CPA Evolution which is a new model for licensure that is scheduled to launch in January of 2024.<sup>7</sup> The depiction below communicates the framework that AICPA and NASBA are using as they reimagine exam content.



The role of CPAs has evolved and the licensing body and professional organization are evolving the standard for the examination. While there is a continual focus on accounting, auditing and tax which is foundational for all accountants, technology has been added. Those that sit for the CPA examination will be able to focus on one of three proposed disciplines:<sup>8</sup>

□ **Business Analysis & Reporting (BAR)** — For BAR, candidates would likely be interested in assurance or advisory services, financial statement analysis and reporting, technical accounting, and financial and operations management. Content may have a data analytics focus and assess topics such as financial risk management and financial planning techniques, including projections. We also anticipate BAR covering more advanced technical accounting and reporting topics at higher-skill levels, including assessment of revenue recognition and leases as well as business combination, derivative and hedge accounting, and employee benefit plan financial statements. Current plans for BAR include an area on state and local government accounting that could address content and skills currently tested in the Financial Accounting and Reporting (FAR) section of today's CPA Exam.

□ **Information Systems and Control (ISC)** — ISC is focused on technology and business controls and targets for candidates interested in assurance or advisory services related to business processes, information systems, information security and governance, and IT audits. This Discipline may have content focused on Digital content governance, internal control testing and information system security, including network security, software, access and endpoint security. The performance of SOC engagements is also likely to be covered in this section.

<sup>7</sup> <https://www.evolutionofcpa.org/>

<sup>8</sup> <https://future.aicpa.org/news/article/cpa-evolution-what-is-the-early-thinking-on-three-cpa-exam-disciplines>

□ ***Tax Compliance & Planning (TCP)*** – TCP would cover taxation topics involving more advanced individual and entity tax compliance, plus additional content focused on personal financial planning and entity planning. Individual tax planning topics could cover areas such as inclusions and exclusions to gross income and gift taxation compliance and planning. Advanced entity tax compliance coverage might include consolidated tax returns and multijurisdictional tax issues, and transactions between an entity and its owners. Entity planning could include the tax treatments of the formation and liquidation of business entities. Finally, TCP would also likely cover property transactions, including like-kind and involuntary exchanges and related party transactions.

An academic resource hub has been developed to assist faculty in better understanding the evolving landscape and update the content of accounting curriculum in preparation. This is the biggest change in the profession since the adoption of the 150-hour rule in 1983 and is a signal of the need for agility within the profession and accounting programs.

## **Appendix B.**

### **Course and Program Reverences**

*Note: All information obtained from the corresponding university's website.*

#### **Core Courses**

##### **University of Hong Kong**

###### **CB2240 - Introduction to Business Programming in Python**

This course will introduce fundamental programming concepts and applications in business services. The main topics include basic concepts of expressions, variables, functions, logic, and conditional statements. Python modules will be used to solve business problems through data analyses and visualizations.

After completing the course, students will be able to write simple Python programs to solve real and practical problems in various business disciplines. As an introductory programming course, the concepts and skills will help students understand how information technologies (Python programming) facilitate data-driven decision-making processes in modern organizations.

With the looming transformative impacts of AI and machine learning in areas such as auditing, FinTech, digital marketing, and supply chain 4.0, this introductory Python course will pave ways for all business students to pursue more advanced skills necessary to adapt to the changing labor market. Students wishing to advance their programming skills in Python and basic machine learning can take the advanced course of IS2240 Python Programming for Business.

[CB2240.pdf](#)

##### **University of Hong Kong**

###### **CB2203 - Data-driven Business Modeling**

This course aims to develop students' ability to formulate, analyze and solve business problems using data modeling. Real problems that companies encounter on a day-to-day basis are presented, with the aim of helping students derive applicable principles and link principles to practice. The goal of the course is to train students to become effective modelers who can derive data models for solving business problems in various functional areas.

[CB2203.pdf](#)

##### **University of Hong Kong**

###### **IS2023 - Mobile Applications for Business**



Local and global business firms start to realize the importance of mobile business applications and to invest heavily into developing mobile applications for their business improvements and innovations. This trend creates great demand for our graduates and business professionals with knowledge and skills in mobile applications.

This course aims to

- Provide students with a good understanding of the mobile business eco-systems and mobile platforms for business innovations;
- Equip students with knowledge and skills to design business models for mobile applications in various business sectors like finance, accounting, business management, and health-care services; and
- Enable students to develop mobile applications for business innovations with features like location-based services and profile-based recommendation services.

Students will be exposed to various mobile business applications in various business sectors. They will also learn the knowledge and skills for analysis, design, implementation and operation of mobile business applications for business improvements and innovations.

[IS2023.pdf](#)

## **University of Hong Kong**

IS2021 - Big Data Management

Big data is one of the most important disruptive information technologies that transforms the business and society today. Local and global business firms start to realize the importance of big data, they invest heavily in these areas to drive substantial enhancements in their business models, partnerships and business processes. This trend creates great demand for our graduates and business professionals with knowledge and skills in big data management for business innovations.

This course aims to:

- Provide students with a solid understanding of the principles, methods and technologies for big data management to drive business innovations;
- Equip students with the essential knowledge and skills to model the requirements, design a plan for big data management and evaluate the effectiveness of the proposed solution;
- Enable students to apply the learnt methods and technologies in big data management for business improvements and innovations.

[IS2021.pdf](#)

## **University of Johannesburg**

Informatics 100NQF

The primary purpose of this module is to provide Accountancy professionals with basic knowledge of the analysis, design and development of algorithms into programs demonstrating correctness using a visual computer language such as Visual Basic

Module learning outcomes: On completion of the learning event, the student should be able to:

- Solve programming problems using a computer.
- Analyze, design and program algorithms.
- Use control structures in algorithms and computer programs.
- Demonstrate the use of arrays and records in computer programs.
- Demonstrate computer programs.

## **University of Ottawa**

ADM 4346 Auditing in a digital environment (3 units)

Information technology and the digital environment as it affects the internal and external auditor. IT risks. Audit Data Analytics. Automated data capture and real time reporting. Distributed databases, blockchain and cryptocurrencies. Internet of things. Cloud computing. Systems reliability, privacy, confidentiality, security, integrity, availability. Control frameworks. Business intelligence, artificial intelligence and machine learning. Systems life cycle. Information asset and intellectual property.

## **University of Ottawa**

ADM 2302 Business Analytics (3 units)

Introduction to problem solving techniques with the focus on decision making for efficiency, profitability, and sustainability. Tools for structured problem solving applicable in the areas of management, finance, marketing, organizational planning, transportation, operations, and allocation of scarce resources. Emphasis on computer-based modeling approaches to facilitate formulation, resolution, and interpretation of the results.

## **University of Iowa**

BAIS:2800 Foundations of Business Analytics 3 s.h.

Introduction to business decision making using data; students transform data into insight using visualization and statistics; introduction to Excel as a tool for business analytics.

## **Nanyang Technological University**

Bachelors of Accountancy with Minor in Digitalization and Data Analytics

- 2 Compulsory Courses
  - Designing and Developing Databases

- Analytics I: Visual and Predictive Techniques
- Elective Courses: Choose 2 out of the following:
  - Forensic Accounting and Fraud Investigation
  - Audit Analytics
  - FinTech in Investment Management
  - Cyber Risk Management and Insurance
  - Analytics II: Advanced Predictive Techniques
  - Supply Chain Analytics
  - Lean Operations & Analytics
  - Decision Modelling & Analysis
  - AI in Accounting & Finance
  - Programming for Business Transformation

## **Villanova University**

### [Masters of Accounting Analytics](#)

#### *Audit and Advisory Services Track*

##### Fall Semester

MAC 8200 Leadership for the New Accounting Professional  
 MAC 8201 Taxes and Business Strategy  
 MAC 8203 Advanced Topics in Financial Reporting and Fraud  
 MAC 8205 Accounting Systems and Controls  
 MAC 8209 Advanced Topics in Auditing  
 MAC 8217 Accounting Analytics

##### Spring Semester

MAC 8300 Negotiations  
 MAC 8301 Performance Measurement and Business Risk Management  
 MAC 8302 Special Topics in Accounting Analytics  
 MAC 8207 Data Models  
 MAC 8303 Valuation Issues in Accounting  
 MAC 8307 Advanced Business and Technical Writing

#### *Tax Services Track*

##### Fall Semester

MAC 8201: Taxes and Business Strategy  
 MAC 8231: Taxation of Corporations and Shareholders  
 MAC 8223: Partnership Taxation  
 MAC 8210: Accounting Systems and Controls  
 MAC 8217: Accounting Analytics

##### Spring Semester

MAC 8500: Tax Internship  
 MAC 8227: International Taxation

MAC 8225: Advanced Topics in Taxation  
MAC 8207: Data Models, Data Analysis, and Visualization  
MAC 8301: Performance Measurement & Business Risk Management

**University of Indiana**  
Masters in Accounting Analytics

**BUS-K513 Predictive Analytics/Data Mining**

High quality information is the key to successful management of businesses. Despite large quantity of data that is collected by organizations, managers struggle to obtain information that would help them in decision making. Data mining or predictive analytics is the use of machine learning algorithms to find patterns of relationships between data elements in large and noisy data sets, which can lead to actions that accrue organizational benefits, for example, by reduction of costs, enhancement of revenue, and better management of business risks. Compared to traditional statistics, which often provide hindsight, the field of predictive analytics seeks to find patterns and classifications that look toward the future. By finding patterns previously not seen, predictive analytics not only provides a more complete understanding of data but is also the basis for models that predict, thus, enabling managers to make better decisions.

**University of Indiana**

**BUS-K507 Intro to Spreadsheet Modeling**

In this course we will use spreadsheet modeling to solve business problems. We will show how sophisticated Excel models can be applied to many problems such as those you will face in your internships and ultimate career. In addition to Excel fundamentals, we will learn how optimization tools, as part of the business analytic toolkit, are used to find tools to find the optimal—or near optimal solutions to constrained optimization problems. We also will consider Monte Carlo simulations that allow us to model uncertainty in Excel models. Throughout the course we will show you many features of Excel 2013 that will be useful in your career and MBA classes.

**University of Indiana**

**BUS-S523 Enterprise Data Management**

While we often hear about the importance of making data-driven decisions, many organizations fall short in taking full advantage of their data assets. Why do some firms invest millions of dollars in collecting data, only to scrap their projects a few years later? Why do so many companies suffer from data quality issues? What is data warehouse, and what problem is it meant to address? This course explores some of the core issues—along with their solutions—that organizations may encounter in building analytic capability. Through discussions, case studies, and hands-on exercises, this 7-week course provides students with a map that shows where various data-related issues (both managerial and technical) can occur and what types of solutions managers can consider.