The University Senate of Michigan Technological University

Proposal 10-20

(Voting Units: Academic)

Establishment of a New Graduate Certificate in Accounting Analytics

Submitted by:
Master of Science in Accounting (MSA) Program
College of Business

1. **Proposal Date:**   July 26, 2019

2. **Proposing Contacts and Departments:**   Joel C. Tuoriniemi, MSA Program Director
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3. **Sponsor Department Approvals:** Not Applicable

4. **General Description and Characteristics of Certificate**

   4.1 General Description

   The College of Business at Michigan Tech proposes a nine credit Certificate in Accounting Analytics. Accounting analytics is needed at the graduate level to provide students with a skill set that is valued by prospective employers and rapidly becoming an expected educational outcome. For more information, please refer to a paper released by the Big 4 accounting firm Pricewaterhouse Coopers entitled "Data Driven – What Students Need to Succeed in a Rapidly Changing Business World"

   The proposed certificate provides graduate students with a contemporary and robust education in accounting analytics that will provide them with a competitive edge when entering the professional work environment.

   The goal of the certificate is not to turn those seeking the designation into computer programmers or data science experts. There are a number of quality programs already in existence at Michigan Tech that provide students with this opportunity. It is extremely important, however, that students be able to utilize common accounting analytics techniques to communicate with computer programmers and data experts in order to make informed business decisions. The Certificate in Accounting Analytics meets this need.

   4.2 Catalog Description

   Coursework in the Accounting Analytics Certificate is designed to allow students to develop knowledge and skills expected in a contemporary accounting environment that utilizes analytics to drive informed business decision making.

5. **Rationale**

   a. Strategic initiative to prepare students in accordance with Tech Forward "How Will Michigan Tech Influence and Adapt to Five Disruptive Forces", most notably as it relates to Data Sources and Big Data

   b. Strategic initiative to prepare students in accordance with the vision of Michigan Tech's College of Business to produce "tech-savvy business graduates"

   c. Michigan Tech's College of Business' accreditation body, the Association to Advance Collegiate Schools of Business (hereinafter, "AACSB"), now requires accounting programs to demonstrate "development of skills and knowledge related to data creation, data sharing, data analytics, data mining, data reporting, and storage within and across organizations." (AACSB Standard 9 – Curriculum Content)

   d. In an April 2017 survey by Forbes Insight and KPMG, 26% of financial executives said advanced technologies would become essential to accounting in the next two years, and 55% viewed advanced technology skills as becoming a "must have" in three to five years. https://home.kpmg.com/content/dam/kpmg/us/pdf/2017/08/KPMG-Forbes-Digital-Transformation-report.pdf

6. **Related Programs**

   The following is a sampling of AACSB accredited schools that offer related programs:

   a. The Rochester Institute of Technology Saunders College of Business offers a 12-credit Accounting and Financial Analytics Advanced Certificate. https://saunders.rit.edu/graduate/advanced-certificates/accounting-and-financial-analytics-advanced-certificate

   b. Michigan State University Broad College of Business offers a 9-credit Master Certificate in Business Analytics. https://www.michiganstateuniversityonline.com/programs/certificates/business-analytics/business-analytics-master-certificate/

   c. Penn State offers an online 9-credit Graduate Certificate in Business Analytics. https://www.worldcampus.psu.edu/degrees-and-certificates/business-analytics-certificate/overview

   d. Cornell University offers a 9-credit Data Analytics Certificate. https://info.ecornell.com/data-analytics

e. The University of Connecticut offers a 12-credit Online Business Certificate in Accounting Analytics. https://accountinganalytics.uconn.edu/?gclid=EAIaIQobChMIstOwue7A4QIVCN bACh3_bgt_EAAYASAAEgKaafD_BwE

f. Providence College offers a 9-credit Business Analytics Graduate Certificate. https://business.providence.edu/cert-mba/

g. The University of Portland Pamplin School of Business offers a STEM designated 12-credit Business Analytics Certificate. https://business.up.edu/certificates/business-analytics-certificate.html

7. Projected Enrollment

It is projected that most of the enrollment in the program will be from Michigan Tech students who have completed nine credits of undergraduate accounting (Financial Accounting, Managerial Accounting, & Intermediate Accounting). This is because one of the required courses in the proposed certificate, ACC 4000 – Accounting Data Analytics, requires Intermediate Accounting as a pre/co-requisite. Analysis of prior years' student profiles suggest the majority of students satisfying this nine-credit sequence will be 1) students who have earned undergraduate degrees from the College of Business, Mathematical Sciences, and Scientific & Technical Communication (who will hopefully then transition in to the MSA program) and 2) the majority of students enrolled in the Master of Science in Accounting (MSA) program.

Fall 2019 -	15 students
Fall 2020 -	17 students
Fall 2021 -	20 students
Fall 2022 -	23 students
Fall 2023 -	26 students

8. Scheduling Plans

The coursework will be offered during regular instructional time periods and will not require changes to scheduling of classes.

9. Curriculum Design

Required Coursework – 6 credits

ACC 4000 - Accounting Data Analytics
ACC 5700 - Accounting Analytical Methods

Elective Coursework – 3 credits

ACC 5200 -   Financial Statement Analysis OR
BA 5200 -   Information Systems Management & Data Analytics

10. Course Descriptions

Course Descriptions for each respective course are as follows:

ACC 4000 - Accounting Data Analytics

Develop knowledge and competencies in data analytic techniques to generate accounting information used for business intelligence. Applied exercises with software tools used to cover topics including data preparation, analysis, visualization, and scenario analysis.

ACC 5700 – Accounting Analytical Methods

Statistical analysis of large datasets. Computer programming will be used to analyze and manipulate the data. Topics include fundamental analysis, fraud detection, default prediction on loans, and other contemporary accounting issues.

ACC 5200 - Financial Statement Analysis

Study of financial statement analysis and concepts of valuation utilizing accounting based financial information. Methods are applied to encompass decision making, communication, and judgement using problems, cases, and projects.

BA 5200 - Information Systems Management and Data Analytics

Focuses on management of IS/IT within the business environment. Topics include IT infrastructure and architecture, organizational impact of innovation, change management, human-machine interaction, and contemporary management issues involving data analytics. Class format includes lecture, group discussion, and integrative case studies.

Students pursuing the Certificate in Accounting Analytics will work with their advisors to choose the best elective course, given area of interest and prior coursework. As an example, students with appropriate backgrounds in accounting would be advised to select BA 5200 as the elective course, whereas students with appropriate backgrounds in management information systems would be advised to select ACC 5200.

11. Model Schedule Demonstrating Completion Time

The Certificate is designed to be completed over a two-semester sequence.

Fall Semester	Spring Semester
ACC 4000 Accounting Data Analytics	ACC 5700 Accounting Analytical Methods
ACC 5200 Financial Statement Analysis	

<div align="center">OR</div>

Fall Semester	**Spring Semester**
ACC 4000 Accounting Data Analytics	ACC 5700 Accounting Analytical Methods BA 5200 Information Systems Management and Data Analytics

At this time, the Certificate will be completed on-campus. The SBE is exploring utilization of a synchronous classroom that would allow for a distance learning opportunity in the future.

12. Library and Other Learning Resources

No new library or other learning resources will be required by the MSA program

13. Faculty Resumes

The College of Business has the following faculty members in the accounting program:

> Robert Hutchinson, Professor
>
> Sheila Milligan, Senior Lecturer – Richard and Joyce Ten Haken Faculty Fellow
>
> Joel Tuoriniemi, Professor of Practice – Ed & Betty Robinson Faculty Fellow
>
> Jun Dai, Assistant Professor (joining January 2020)

Curriculum Vitae can be found at https://www.mtu.edu/business/people-groups/faculty-staff/. Dr. Jun Dai's CV is attached hereto.

The College of Business is also searching for an additional faculty member with an anticipated start date of Fall 2020. Finalists for the position are scheduled for on campus visits during September 2019.

14. Equipment

No additional equipment will be required.

15. Program Costs

No additional costs are anticipated. Current faculty resources would support enrollment growth to 75 students (at a 15:1 ratio). Charges for any software not provided through gratuitous educational licenses can be recovered through appropriate course lab fees.

16. Space

No additional space will be required.

17. Policies, Regulations, and Rules

Not Applicable

18. Accreditation Requirements

The College of Business is accredited by the AACSB. Adding this certificate program will not result in any change to accreditation requirements. The Certificate in Accounting Analytics will automatically become subject to periodic review along with all other degree programs within the College of Business.

19. Planned Implementation Date

Fall 2020

20. Assessment

Program Educational Outcomes:

Students completing this program will be able to

1. Access data in and use legacy technologies (e.g., Excel, Access);
2. Use structured and unstructured databases (e.g., SQL, Hadoop);
3. Obtain and clean accounting data;
4. Demonstrate effective data visualization skills;
5. Perform descriptive, predictive, prescriptive analyses;
6. Program in Python and R Open
7. Communicate effectively with clients.

An overview of where the assessment will occur is as follows:

Educational Outcome	COURSE
Legacy Technologies (Excel, Access)	ACC 4000 BUS 5200

Structured and Unstructured Databases (SQL, Hadoop)	ACC 4000 BUS 5200
Obtaining and Cleaning Accounting Data (Alteryx)	ACC 4000 ACC 5700 BUS 5200
Data Visualization (Tableau, PowerBI)	ACC 4000 ACC 5200 ACC 5700
Descriptive, Predictive, Prescriptive Analyses (Oracle, SAS)	ACC 4000 ACC 5200 ACC 5700
Programming Languages (Python, R Open)	ACC 5700 BUS 5200
Client Communication	ACC 4000 ACC 5200 ACC 5700 BUS 5200

Review and Approval by SBE Faculty: March 22, 2019
Review and Approval by SBE Dean: March 22, 2019
Review by Provost and Deans' Council: November 8, 2019
Review and Approval by Graduate Faculty Council: November 5, 2019
Review by Senate Curricular Policy Committee:
Introduced to Senate:
Approved by Senate:
Approved by Provost & President: