Michigan Tech

Office of the Provost and
Senior Vice President for Academic Affairs

Office Memo

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TO: Richard Koubek, President

FROM: Jacqueline E. Huntoon, Provost & Senior Vice President for Academic Affairs   *Jacqueline E Huntoon*

DATE: February 26, 2019

SUBJECT: Senate Proposal 17-19

Attached is Senate proposal 17-19, "Proposal for a New Concentration in Data Analytics Within the B.S. in Accounting," and a memo stating the Senate passed this proposal at their February 20, 2019 meeting. I have reviewed this memo and recommend approving the proposal.

I ____X____ concur   _____ do not concur

_____   3/4/19
Richard Koubek, President   Date

DATE:	February 21, 2019
TO:	Richard Koubek, President
FROM:	Michael Mullins University Senate President
SUBJECT:	Proposal 17-19
COPIES:	Jacqueline E. Huntoon, Provost & Senior VP for Academic Affairs

At its meeting on February 20, 2019, the University Senate approved Proposal 17-19, "Proposal for a New Concentration in Data Analytics Within the B.S. in Accounting". The Senate looks forward to approval of this proposal by the administration. Please keep me informed about the decision of the administration on this proposal and feel free to contact me if you have any questions.

The University Senate of Michigan Technological University

Proposal 17-19
(Voting Units: Academic)

Proposal for a New Concentration in Data Analytics Within the B.S. in Accounting

Contact: Joel C. Tuoriniemi, MSA Program Director
School of Business and Economics (jctuorin@mtu.edu)

1. **<u>Program Description</u>**

   The School of Business and Economics at Michigan Tech proposes a spin-off from the B.S. in Accounting degree to a B.S. in Accounting with a Concentration in Data Analytics. Data analytics is needed at the undergraduate level to provide accounting 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 program leverages existing faculty and resources in accounting, management information systems, and mathematics to create a contemporary and robust concentration in data analytics that will provide accounting majors with a competitive edge when entering the professional work environment or in preparation for advanced studies at the graduate level. In fact, only one new accounting course at the undergraduate level is contemplated in the curriculum design.

   The goal of the program is not to turn accounting students into computer programmers or database 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 accountants be able to utilize common data analytics techniques to communicate with computer programmers and database experts in order to make informed business decisions. The B.S. in Accounting with a Concentration in Data Analytics meets this need.

2. **<u>Rationale</u>**

   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 School of Business and Economics to produce "tech-savvy business graduates"

c. Michigan Tech's School of Business and Economics' 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

3. **Related Programs**

It is important to note that no similar programs could be found in universities located in Michigan and Wisconsin. This could help differentiate Michigan Tech's program in an effort to meet enrollment growth goals.

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

a. Stevens Institute of Technology offers a bachelor's degree in Accounting & Analytics that has an "accounting core" and an "analytics core" embedded in the degree requirements, similar to this proposal. https://www.stevens.edu/school-business/undergraduate-programs/accounting-analytics

b. St. Mary's University offers a bachelor's degree in Accounting & Data Analytics. https://www.stmarytx.edu/academics/programs/accounting-data-analytics/

c. The Krannert School of Management at Purdue University offers a Data Analytics concentration to all majors, including accounting. https://krannert.purdue.edu/undergraduate/concentrations/data-analytics.php

d. University of Buffalo offers a Data Analytics concentration to all majors, including accounting. https://catalog.buffalo.edu/academicprograms/business_administration_bs_-_data_analytics_requirements.html

e. University of Strathclyde Glasgow offers a bachelor's degree in Accounting & Business Analysis.

4. **Projected Enrollment**

As of Fall 2019, the undergraduate accounting program had 52 majors. We project that over time most students will opt to receive a B.S. in Accounting with a Concentration in Data Analytics as opposed to a "stand-alone" B.S. in Accounting. We also project an increase in overall enrollment in the undergraduate accounting program due to this concentration.

Academic Year	B.S in Accounting	B.S in Accounting with Concentration in Data Analytics	Total Enrollment
Fall 2018	52	0	52
Fall 2019	58	0	58
Fall 2020	40	24	64
Fall 2021	27	44	71
Fall 2022	20	49	79

5. **Scheduling Plans**

The coursework will be offered during regular instructional time periods.

6. **Curriculum Design**

The curriculum design in the proposed B.S. in Accounting with a Concentration in Data Analytics will differ from the B.S. in Accounting in the following aspects:

a. Students seeking the B.S. in Accounting with a Concentration in Data Analytics will be required to complete a 12 credit requirement in the following courses:

ACC 4000   Accounting Data Analytics
ACC 4800   Accounting Systems
MIS 2100   Introduction to Business Programming
MIS 3100   Business Database Management

b. Students will complete a 6 credit elective requirement. To differentiate from the B.S. in Accounting, the following courses will only be available to students completing the B.S. in Accounting with a Concentration in Data Analytics to satisfy the major elective requirement:

MIS 3000	Business Process Analysis
MIS 3200	Systems Analysis & Design
MIS 3400	Business Intelligence
MIS 3500	User-Centered Design
MIS 4000	Advanced Information Systems
MIS 4200	Management of Cybersecurity
MA 3720	Probability
MA 3740	Statistical Programming & Analysis
MA 4710	Regression Analysis

Meetings with the School of Business and Economics' Accounting Advisory Council, as well as with other external stakeholders including alumni and employers resulted in the accounting faculty adopting learning objectives for the proposed program. A summary of these learning objectives, examples of software, and course mapping using "Introduce, Reinforce, Master" levels is set forth below.

LEARNING OBJECTIVE	Introduce	Reinforce	Master
Learning of Legacy Technologies (Excel, Access)	• SBE Business Core Courses	• ACC 4000	• ACC 4000
Understanding Structured and Unstructured Databases (SQL, Hadoop)	• SBE Business Core MIS Courses	• MIS 2100	• MIS 3100 • Concentration Electives
Obtaining and Cleaning Data (Alteryx)	• MIS 3100	• ACC 4000 • ACC 4800	• ACC 4000 • ACC 4800
Data Visualization (Tableau, PowerBI)	• SBE Business Core Courses	• ACC 4000 • ACC 4800	• ACC 4000 • Concentration Electives
Descriptive, Predictive, Prescriptive Analysis (Oracle, SAS)	• SBE Statistics Course Requirement	• ACC 4000 • Concentration Electives	• Concentration Electives
Programming Languages (Python, R Open)	• MIS 2100	• ACC 4000 • Concentration Electives	• Concentration Electives

A summary of the changes in the curriculum design of the undergraduate accounting program is set forth below:

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Current
Major Requirements   **Proposed**
Major Requirements

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ACCOUNTING	ACCOUNTING	ACCOUNTING w/ DATA ANALYTICS
Course Number	**Course Number**	**Course Number**
Complete 21 Credits	**Complete 15 Credits**	**Complete 15 Credits**
ACC 3000 Intermediate I	ACC 3000 Intermediate I	ACC 3000 Intermediate I
ACC 3100 Intermediate II	ACC 3100 Intermediate II	ACC 3100 Intermediate II
ACC 3500 Cost	ACC 3500 Cost	ACC 3500 Cost
ACC 3600 Tax	ACC 3600 Tax	ACC 3600 Tax
ACC 4100 Audit	ACC 4100 Audit	ACC 4100 Audit
ACC 4700 Governmental	**Complete 18 Credits**	**Concentration Requirements: Complete 12 Credits**
ACC 4800 Systems	ACC 4000 Data Analytics	ACC 4000 Data Analytics
List 1: Select 3 Credits	ACC 4200 Theory	ACC 4800 Systems
ACC 4200 Theory	ACC 4500 Adv Cost	MIS 2100 Business Programming
ACC 4500 Adv Cost	ACC 4600 Adv Tax	MIS 3100 Database Management
ACC 4600 Adv Tax	ACC 4700 Governmental	**Concentration Electives: Complete 6 Credits**
List 2: Select 9 Credits	ACC 4800 Systems	MIS 3000 Business Process Analysis
ACC 4200 Theory	ACC 4990 Special Topics	MIS 3200 Systems Analysis & Design
ACC 4500 Adv Cost	BUS 3900 Internship	MIS 3400 Business Intelligence
ACC 4600 Adv Tax	BUS 4950 Bus Project	MIS 3500 User Centered Design
ACC 4990 Special Topics	BUS 4900 Res Project	MIS 4000 Advanced Information Systems
BUS 3900 Internship	BUS 4990 Special Topics	MIS 4200 Management of Cybersecurity
BUS 4950 Bus Project	BUS 4991 Bus Exp	MA 3720 Probability
BUS 4900 Res Project	BUS 4992 Bus Exp	MA 3740 Statistical Programming & Analysis
BUS 4990 Special Topics	EC 3300 Ind Org	MA 4710 Regression Analysis
BUS 4991 Bus Exp	FIN 4000 Investments	
BUS 4992 Bus Exp	FIN 4100 Adv Fin Mgmt	
EC 3300 Ind Org	FIN 4300 Pers Fin Planning	
FIN 4000 Investments	FIN 4400 Sec Analysis	
FIN 4100 Adv Fin Mgmt	FIN 4801 APMP	
FIN 4300 Pers Fin Planning	FIN 4802 APMP	
FIN 4400 Sec Analysis	FIN 4803 APMP	
FIN 4801 APMP	~~MIS 2100~~	

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FIN 4802 APMP		~~MIS 3100~~			
FIN 4803 APMP					
MIS 2100 Bus Programming					
MIS 3100 Database Mgmt					

7. New Course Descriptions

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 are used to cover topics including data preparation, analysis, visualization, and scenario analysis.

Possible Textbook: [Data Analytics for Accounting, 1st Edition by Richardson et. al.](#)

8. Library and Other Learning Resources

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

9. Faculty Resumes

The School of Business and Economics has five faculty members in the accounting program:

> Robert Hutchinson, Associate Professor
>
> Dan Eshleman, Assistant Professor – Richard & Joyce Ten Haken Faculty Fellow
>
> Peng Guo, Assistant Professor – Richard & Joyce Ten Haken Faculty Fellow
>
> Sheila Milligan, Senior Lecturer
>
> Joel Tuoriniemi, Professor of Practice – Ed & Betty Robinson Faculty Fellow

Curriculum Vitae can be found at https://www.mtu.edu/business/people-groups/faculty-staff/.

10. Description of Available/Needed Equipment

No additional equipment will be required by either program.

11. 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.

12. Space

Additional time in an existing classroom will be required to offer the new undergraduate accounting course (ACC 4000 – Accounting Data Analytics).

13. Policies, Regulations, and Rules

Not Applicable

14. Accreditation Requirements

The School of Business and Economics is accredited by the AACSB. Adding this degree program will not result in any change to accreditation requirements. The BS in Accounting with a Concentration in Data Analytics will be automatically accredited and subject to periodic review along with all other degree programs within the School of Business and Economics.

15. Planned Implementation Date

Fall 2020

Review and Approval by SBE Faculty: December 7, 2018
Review and Approval by SBE Dean: December 7, 2018
Review and Approval by Deans' Council: December 11, 2018
Review by Provost:
Review by Senate Curricular Policy Committee:
Introduced to Senate:
Approved by Senate:
Approved by Provost & President:

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