Establishment of a New Graduate Certificate in Forensic Accounting

Submitted by:
Master of Science in Accounting (MSA) Program
School of Business and Economics

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

2. **Proposing Contacts and Departments:** Joel C. Tuoriniemi, MSA Program Director (jctuorin@mtu.edu)

3. **Sponsor Department Approvals:** Not Applicable

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

   **4.1 General Description**

   The School of Business and Economics at Michigan Tech proposes a nine credit Certificate in Forensic Accounting. Forensic accountants investigate and prevent white-collar criminal activity in the financial and banking sectors. They combine their accounting knowledge with investigative skills in various litigation support. Forensic accountant also have the knowledge to assist in development of corporate accounting systems and risk assessment to help prevent fraud. They are employed by public accounting firms, corporations, and governmental units.

   The proposed certificate provides graduate students with the ability to detect and prevent fraudulent activity through a series of case studies, risk analysis techniques, and auditing studies.

   **4.2 Catalog Description**

   Coursework in the Forensic Accounting Certificate is designed to allow students to develop knowledge and skills in investigative accounting and fraud prevention. Our contemporary program combines traditional auditing principles with information security and data analysis techniques to provide students with advanced forensics training.

5. **Rationale**

   In a the wake of scandals such as Madoff, Wells Fargo, Enron and many others, the demand for Forensic Accountants has grown about 20% per year. It is estimated by the Association of Certified Fraud Examiners that approximately 5% annual revenue around
the world is lost to fraud. Globally that translates to $3.5 trillion in potential losses. Fraud is notoriously difficult to detect and counteract; the typical perpetrator is intelligent, well-educated and in a position that allows them to easily cover their tracks.

Forensic accountants generally enjoy a 31% income premium over their peers. There are 2 main certificates options open for Forensic Accountants, the CFE (Certified Fraud Examiner) and CFF (Certified in Financial Forensics). The Certificate in Forensic Accounting would assist the students in passing those examinations.

6. **Related Programs**

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

a. The University of North Carolina – Charlotte offers a 9-credit Forensic Accounting Certificate. [https://continuinged.uncc.edu/forensic](https://continuinged.uncc.edu/forensic)


c. SUNY Polytechnic Institute offers a 9-credit Forensic Accounting & Valuation Concentration as part of its Master of Science in Accounting program. [https://sunypoly.edu/academics/majors-and-programs/ms-accountancy/forensic-accounting.html](https://sunypoly.edu/academics/majors-and-programs/ms-accountancy/forensic-accounting.html)

d. Rider University offers a 12-credit Forensic Accounting Graduate Certificate. [https://www.rider.edu/academics/colleges-schools/college-business-administration/graduate-programs/forensic-accounting-graduate-certificate-program](https://www.rider.edu/academics/colleges-schools/college-business-administration/graduate-programs/forensic-accounting-graduate-certificate-program)

e. Purdue University Northwest offers a 12-credit Forensic Accounting Certificate. [https://academics.pnw.edu/business/forensic-accounting-fraud-investigation/](https://academics.pnw.edu/business/forensic-accounting-fraud-investigation/)

f. Georgia Southern University Parker College of Business offers a 12-credit Forensic Accounting Certificate. [https://parker.georgiasouthern.edu/soa/forensic-certificate/](https://parker.georgiasouthern.edu/soa/forensic-certificate/)

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 4100 – Audit & Assurance, 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 School of Business & Economics, 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.

<table>
<thead>
<tr>
<th>Fall Year</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2019</td>
<td>10 students</td>
</tr>
<tr>
<td>Fall 2020</td>
<td>12 students</td>
</tr>
<tr>
<td>Fall 2021</td>
<td>15 students</td>
</tr>
<tr>
<td>Fall 2022</td>
<td>18 students</td>
</tr>
<tr>
<td>Fall 2023</td>
<td>20 students</td>
</tr>
</tbody>
</table>

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 4100 - Audit & Assurance
   - ACC 5100 - Advanced Audit & Forensic Examination

   **Elective Coursework – 3 credits**

   - BA 5200 - Information Systems Management & Data Analytics OR
   - MA 5701 - Statistical Methods OR
   - MA 5781 - Time Series Analysis & Forecasting

10. **Course Descriptions**

    Course Descriptions for each respective course are as follows:

    **ACC 4100 - Audit and Assurance**
    Auditing procedures and techniques associated with public accounting and with internal auditing for business entities. Topics include auditor's responsibilities, professional ethics, generally accepted auditing standards, purpose and types of audits, objectives, internal control, evidence, organization within the public accounting profession, the audit program, and auditing procedures and techniques.

    **ACC 5100 - Advanced Auditing and Fraud Examination**
    An in-depth study of auditing with a focus on fraud examination from an external auditor's perspective. The course utilizes problems, cases, and projects relating to fraud examination and forensic accounting.

    **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.

**MA 5701 - Statistical Methods**
Introduction to design, conduct, and analysis of statistical studies, with an introduction to statistical computing and preparation of statistical reports. Topics include design, descriptive, and graphical methods, probability models, parameter estimation and hypothesis testing.

**MA 5781 - Time Series Analysis and Forecasting**
Statistical modeling and inference for analyzing experimental data that have been observed at different points in time. Topics include models for stationary and non-stationary time series, model specification, parametric estimation, model diagnostics and forecasting, seasonal models and time series regression models.

Students pursuing the Certificate in Forensic Accounting will work with their advisors to choose the best elective course, given area of interest and prior coursework.

11. **Model Schedule Demonstrating Completion Time**

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

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 4100 Audit &amp; Assurance</td>
<td>ACC 5100 Advanced Audit &amp; Forensic Exam</td>
</tr>
</tbody>
</table>

Students will complete the Certificate requirements through taking the elective course in either Fall (MA 5701) or Spring (BUS 5200 or MA 5781) semester.

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

19. **Planned Implementation Date**

Fall 2019
20. **Assessment**

The Learning Objectives in the Certificate program are adopted from the American Institute of Certified Public Accountants (AICPA) Model Curriculum for Forensic Accounting, namely:

1. Understand the ethical and legal environment and responsibilities of a forensic accountant;
2. Demonstrate core forensic knowledge;

The Certificate program will also include a fourth Learning Objective centered on client communication.

An overview of Learning Objectives and potential courses for where the assessment will occur is as follows:

<table>
<thead>
<tr>
<th>LEARNING OBJECTIVE</th>
<th>COURSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand responsibilities of forensic accountant</td>
<td>ACC 4100, ACC 5100</td>
</tr>
<tr>
<td>Demonstrate core forensic knowledge</td>
<td>ACC 5100, BUS 5200/MA 5701/MA 5781</td>
</tr>
<tr>
<td>Demonstrate understanding of forensic accounting in specific settings</td>
<td>ACC 4100, ACC 5100</td>
</tr>
<tr>
<td>Client Communication</td>
<td>ACC 4100, ACC 5100</td>
</tr>
</tbody>
</table>
Review and Approval by SBE Faculty: March 22, 2019
Review and Approval by SBE Dean: March 22, 2019
Review and Approval by Deans’ Council:
Review by Provost:
Review by Senate Curricular Policy Committee:
Introduced to Senate:
Approved by Senate:
Approved by Provost & President:
Establishment of a New Graduate Certificate in Accounting Analytics

Submitted by:
Master of Science in Accounting (MSA) Program
School of Business and Economics

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

2. **Proposing Contacts and Departments:** Joel C. Tuoriniemi, MSA Program Director (jctuorin@mtu.edu)

3. **Sponsor Department Approvals:** Not Applicable

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

   **4.1 General Description**

   The School of Business and Economics 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 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.

6. **Related Programs**

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


b. Michigan State University Broad College of Business offers a 9-credit Master Certificate in Business Analytics.

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](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](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=EAIaIQobChMIstOwue7A4QIVCNbACh3_bgt_EAAYASAAEgKaatD_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 School of Business & Economics, 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.

<table>
<thead>
<tr>
<th>Year</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2019</td>
<td>15 students</td>
</tr>
<tr>
<td>Fall 2020</td>
<td>17 students</td>
</tr>
<tr>
<td>Fall 2021</td>
<td>20 students</td>
</tr>
<tr>
<td>Fall 2022</td>
<td>23 students</td>
</tr>
<tr>
<td>Fall 2023</td>
<td>26 students</td>
</tr>
</tbody>
</table>

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**
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.

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 4000  Accounting Data Analytics</td>
<td>ACC 5700 Accounting Analytical Methods</td>
</tr>
<tr>
<td>ACC 5200  Financial Statement Analysis</td>
<td>ACC 5200 Financial Statement Analysis</td>
</tr>
</tbody>
</table>
OR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 4000 Accounting Data Analytics</td>
<td>ACC 5700 Accounting Analytical Methods</td>
</tr>
<tr>
<td></td>
<td>BA 5200 Information Systems Management</td>
</tr>
<tr>
<td></td>
<td>and Data Analytics</td>
</tr>
</tbody>
</table>

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 School of Business and Economics 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/](https://www.mtu.edu/business/people-groups/faculty-staff/). Dr. Jun Dai’s CV is attached hereto.

The School of Business and Economics 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 School of Business and Economics 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 School of Business and Economics.

19. **Planned Implementation Date**

Fall 2019

20. **Assessment**

An overview of Learning Objectives and potential courses where the assessment will occur is as follows:

<table>
<thead>
<tr>
<th>LEARNING OBJECTIVE</th>
<th>COURSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning of Legacy Technologies (Excel, Access)</td>
<td>ACC 4000</td>
</tr>
<tr>
<td></td>
<td>BUS 5200</td>
</tr>
<tr>
<td>Understanding Structured and Unstructured Databases (SQL, Hadoop)</td>
<td>ACC 4000</td>
</tr>
<tr>
<td></td>
<td>BUS 5200</td>
</tr>
<tr>
<td>Course Description</td>
<td>Courses</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Obtaining and Cleaning Accounting Data (Alteryx)</td>
<td>ACC 4000</td>
</tr>
<tr>
<td></td>
<td>ACC 5700</td>
</tr>
<tr>
<td></td>
<td>BUS 5200</td>
</tr>
<tr>
<td>Data Visualization (Tableau, PowerBI)</td>
<td>ACC 4000</td>
</tr>
<tr>
<td></td>
<td>ACC 5200</td>
</tr>
<tr>
<td></td>
<td>ACC 5700</td>
</tr>
<tr>
<td>Descriptive, Predictive, Prescriptive Analysis (Oracle, SAS)</td>
<td>ACC 4000</td>
</tr>
<tr>
<td></td>
<td>ACC 5200</td>
</tr>
<tr>
<td></td>
<td>ACC 5700</td>
</tr>
<tr>
<td>Programming Languages (Python, R Open)</td>
<td>ACC 5700</td>
</tr>
<tr>
<td></td>
<td>BUS 5200</td>
</tr>
<tr>
<td>Client Communication</td>
<td>ACC 4000</td>
</tr>
<tr>
<td></td>
<td>ACC 5200</td>
</tr>
<tr>
<td></td>
<td>ACC 5700</td>
</tr>
<tr>
<td></td>
<td>BUS 5200</td>
</tr>
</tbody>
</table>

Review and Approval by SBE Faculty: March 22, 2019
Review and Approval by SBE Dean: March 22, 2019
Review and Approval by Deans’ Council:
Review by Provost:
Review by Senate Curricular Policy Committee:
Introduced to Senate:
Approved by Senate:
Approved by Provost & President:
MiTechIDP

Navigate your degree
Develop a strategy to achieve your academic milestones. Minimize misunderstandings & develop the skills needed for your education & career. Reflect & identify goals, opportunities, & potential hurdles.

Plan for your career
Find additional resources and industry contacts. Discover more about what is ahead for you professionally.

Build a mentoring relationship
Go beyond being advised, and get mentored - discover new applications of your degree, reflect on what you want to get out of your graduate education, and explore your interests and career paths.

For more information, check out our webpage!
https://www.mtu.edu/gradschool/resources-for/students/professional/idp/

Michigan Technological University
1885 Graduate School