

The Department of Homeland Security has jurisdiction over the Classification of Instructional Program (CIP) codes that are designated as STEM and has produced the DHS STEM Designated Degree Program List (STEM List). Changing the CIP code to a STEM-designated CIP code will reflect changes in the accounting curriculum and demonstrate that graduates are ready to meet the existing and future needs of American business.

Accountants are integral to the development and innovation of technology, specifically as it relates to finance and business. More than just being users of technology, the accounting programs at today's colleges and universities are teaching students to be innovators by using and assisting in the creation of technology to perform their work. Accounting programs have been making changes to their curricula in recent years noting that students and the marketplace have demanded more technology education from accounting professionals. As a result, a number of accounting programs have pursued STEM designation benefiting both the accounting program and its accounting students.

How has accounting changed in the last 20 years?

While in years past accounting professors taught using multi-column ledger paper to record transactions in accounting classes, accounting programs today use a whole host of technologies including data analytics to address accounting questions, create data visualizations, record data in relational databases, or use technology to identify red flags by examining accounting transactions. With this changed technology, accounting and accounting education is now firmly a STEM subject. Technology is used in almost every aspect of the profession and as a result, it is required for accounting education. So, the biggest benefit of STEM designation is just reflecting the truth. Accountants not only use technology but also engage in research, innovation and development of new technologies primarily using data and financial analytics, but also in the field of computer science.

How does a STEM-designated program help the accounting field?

STEM designation is given to programs that embrace technology and create technological innovation. In truth, since accounting uses and creates technology to address accounting questions and opportunities, it is important to advertise to the world that accounting is STEM. In an era when accounting enrollments are falling, it is important to market the accounting profession as STEM to enlighten those interested in the promise that is accounting to attract the finest students.

How does a STEM-designation lend credence to the technology already taught in an accounting education?

Accountants do more than just use existing technology; they also research and innovate new technologies and contribute to their development. Robotic process automation (RPA) is just one example of how accountants write scripts and develop bots to improve many organizations' operations and financial management. Many emerging technologies (for example, blockchain and cybersecurity technologies) are disrupting the fields of accounting and finance. Professionals in the accounting field are required to understand these technologies and have been instrumental in developing software and other technology to manage them. Further, conducting data and financial analytics is an essential skillset of accountants that requires digital acumen and the ability to develop technologies supporting these skills. As a result of the heavy emphasis on technology in the profession, the education of new students in the profession has had to evolve.

How does a STEM-designated program benefit the United States?

It is estimated that 3.5 million STEM jobs will need to be filled by 2025. Because of both a decline in qualified STEM professionals and an increase in the number of positions going unfilled, STEM programs are even more crucial to producing professionals that can help the U.S.'s economic growth and overall competitiveness in global markets.

How does a STEM-designated program benefit a student?

The STEM-designation is specifically beneficial to international students looking for work and an opportunity to stay in the U.S. If a student has an F-1 visa, she/she is currently eligible for up to 12 months of Optional Practical Training (OPT). OPT allows students to work towards getting practical training to complement their field of studies within the U.S. once they have completed their educational program. STEM students are allowed to apply to extend that period of time for OPT even longer (up to an additional 24 months), which is a direct benefit to students.

How are accounting programs touting STEM? Here's what Ohio State University says:

Master of Accounting
STEM Designation

Science, Technology, Engineering, and Mathematics (STEM) play an increasingly important role in addressing critical needs of today's complex business world. Fisher's **STEM-designated Master of Accounting program** prepares students with the business insights and skills they need to succeed as future leaders.

What does STEM-designation mean for you?

- **Engaging.** The extended Optional Practical Training (OPT) time for STEM-designated programs may enhance your career prospects post-graduate with E-Verified employers.
- **Competitive Advantage.** Fisher College is one of the first accounting programs approved for STEM-designation.
- **Innovative.** Discover the powerful combination of data & analytics and accounting coursework. The Fisher MAcc curriculum provides you with practical use of the latest analytics technology, and real-world experiences that are essential to your career success.

Which accounting programs have received STEM designation to date?

At least 56 schools have received STEM designation for their post graduate programs, including the University of Illinois, Ohio State University, Fordham, Cornell, University of Northern Iowa and the University of Mississippi. At least two, University of Northern Iowa and USC-Marshall School of Business, have received STEM designation for their bachelor's degree programs. (For a detailed listing, please see Toolkit Document: *Jan 2023 - STEM Accounting Program Schools*).

Source: (<https://fisher.osu.edu/graduate/macc/stem-designation>)

**Representative Accounting
Course Title**

**Representative Technology
Taught in the Course**

Accounting Information Systems

Record Data Using Cryptography: Blockchain – cryptography technology to store data in a shared immutable ledger

Protect Data Using Cybersecurity: technology used to protect financial and other sensitive data

Organize Corporate Data into Relational Databases: Access (Microsoft)– Relational Database Management System Software to organize and store data in a scalable way

Auditing (Internal and External)

Evaluate Risk by Examining Accounting Transactions: IDEA – software tool used to assess risk, analyze financial statement data

Prepare Data for Analysis: Alteryx – software tool used to perform ETL (extract, transform and load) procedures to prepare audit data for analysis

Employ Robotic Process Automation (RPA) Techniques to Evaluate Anomalies and Outliers: UiPath is a software tool used to perform Robotic Process Automation (RPA) to consistently evaluate data for anomalies/outliers

Accounting Data Analytics

Write Computer Scripts to Extract Relevant Data: SQL (Structured Query Language) used to extract relevant data from larger database for further analysis

Produce Data Visualizations to Evaluate Data and Communicate Findings: Power BI/Tableau are software tool used to produce and evaluate data visualizations

Analyze Data Using Wide Diversity of Data Analytics Techniques to Address Decision Maker Questions: SPSS/Stata are software tools used to analyze data (regression, correlation, hypothesis testing, variance analysis)

Financial Accounting

Transmit Financial Data Using XML Technology: XBRL (XML - Extensible Markup Language) – technology to electronically communicate financial statement data and other relevant business information. XBRL tags financial data for use in analysis programs.

Support Estimates and Assumptions Using Prescriptive Analytics: Financial accounting requires a host of estimates and assumptions that require sensitivity analysis to support the resulting financial statements

Representative Accounting Course Title

Representative Technology Taught in the Course

Taxation (and Tax Planning)

Use of Time Series and Regression Analytics for Tax Planning Purposes: techniques used to forecast future taxable income as part of tax planning (to structure transactions in a way to minimize future taxes)

Manage Tax Data: Organize tax data using data warehouses, data marts and data cubes to have data ready for use in analysis and as support for uncertain tax positions

Prepare U.S. Tax Returns: Utilize tax preparation software to prepare a hypothetical tax return

Research Tax Issues: Use databases (e.g., RIA Checkpoint, CCH, LexisNexis) to research client tax issues

Determine Implications of Tax Policy Revisions: Incorporate visualization software to assess the impact on taxes from policy revisions

Compare IRS Statistics of Income to Client Hypothetical Return: Perform comparative study using data analytics and visualization software

Forensic Accounting

Identify Red Flags by Examining Accounting Transactions: IDEA – software tool used to assess risk, analyze financial statement data. For example, transactions that occur outside normal business hours, or that do not follow Benford's law distributions may be indicative of fraud

Identify Transactions that do not follow Prescribed Policies using Process Mining Technology: Celonis, UIPath, etc can help identify transactions that bypassed standard authorization procedures

Cost/Management Accounting

Perform Predictive and Prescriptive Analytics to Address Relevant Management Questions: Various technology tools to perform predictive and prescriptive analytics techniques including Optimization, What-if Scenario Analysis, What-If Sensitivity Analysis, Goal-seek Analysis, Cash Flow Analysis (NPV, IRR, etc.)