# SIX SIGMA, CERTIFICATE

This certificate is designed to teach students fundamental Six Sigma principles. Six Sigma is a data-driven approach to improving business processes by increasing process quality and efficiency and is widely adopted in industry. Students may choose from a variety of courses in each of the three main areas: statistical foundations for quality engineering, contemporary industrial data analytics, and manufacturing foundation and project management. Upon completion of this certificate, students will have gained the background knowledge needed to pass the Six Sigma Green Belt certification exam administered by the American Society for Quality (ASQ).

The program is open to any degree-seeking undergraduate engineering student with a plan of study that fulfills the certificate requirements. Applications can be submitted at any time, but students are encouraged to apply early to ensure a smooth and successful completion of the program.

## HOW TO GET IN

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All current undergraduate students in the College of Engineering are eligible to complete the Certificate in Six Sigma. Students should submit an online declaration form at https://engineering.wisc.edu/programs/certificates/six-sigma/declaration (https://engineering.wisc.edu/programs/certificates/six-sigma/declaration/).

## REQUIREMENTS

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- Students must complete certificate courses with a GPA of 2.000 or higher.
- Courses completed on a pass/fail or audit basis will not count toward these requirements.

| Code | Title | Credits |
|---|---|---|
| **Statistical foundations for quality engineering** | | |
| Choose one: | | 3 |
| I SY E/M E  512 | Inspection, Quality Control and Reliability | |
| I SY E 612 | Information Sensing and Analysis for Manufacturing Processes | |
| I SY E 575 | Introduction to Quality Engineering | |
| **Contemporary industrial data analytics** | | |
| Choose one: | | 3 |
| I SY E 412 | Fundamentals of Industrial Data Analytics | |
| I SY E 521 | Machine Learning in Action for Industrial Engineers | |
| I SY E 649 | Interactive Data Analytics | |
| I SY E 562 | Human Factors of Data Science and Machine Learning | |
| **Manufacturing foundation and project management** | | |
| Choose one: | | 3 |
| I SY E 415 | Introduction to Manufacturing Systems, Design and Analysis | |
| I SY E 515 | Engineering Management of Continuous Process Improvement | |
| I SY E/M E  510 | Facilities Planning | |
| I SY E 605 | Computer Integrated Manufacturing | |
| I SY E/M E  641 | Design and Analysis of Manufacturing Systems | |
| **Elective** | | |
| Choose one additional course from any category above | | 3 |
| **Total Credits** | | **12** |

## CERTIFICATE COMPLETION REQUIREMENT

This undergraduate certificate must be completed concurrently with the student's undergraduate degree. Students cannot delay degree completion to complete the certificate.

## LEARNING OUTCOMES

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1. Understand and apply the core Six Sigma methodologies (DMAIC: Define, Measure, Analyze, Improve, Control) to effectively solve real-world problems.
2. Demonstrate an understanding of how Six Sigma enhances process efficiency and reduces variation.
3. Collect, analyze, and interpret data using statistical tools to monitor processes and inform decision-making.
4. Gain experience in managing engineering projects from problem definition through solution implementation and control.
5. Develop the ability to lead and collaborate effectively within cross-functional teams.