

Lean Six Sigma Minor

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Lean Six Sigma

A minor in the Applied Engineering and Technology Management Department

The Lean Six Sigma minor is open to all majors. The minor melds two compatible methodologies: Lean and Six Sigma. Lean focuses on increasing efficiencies and eliminating waste in the supply chain, especially the processing stage. Six Sigma is a quality-focused problem solving methodology. Though both Lean and Six Sigma have their roots in the manufacturing setting, both, especially in combination, are widely applied to construction, mechanical design, banking, education, health care, and many other service and technology industries.



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Lean Six Sigma Minor (21 credits)

The American Society for Quality (ASQ) has over 80,000 members. Approximately 13,500 individuals sit for an ASQ certification each year. There are numerous quality certifications, including Engineer, Manager, Auditor, Reliability, Software, Six Sigma, and others. Whether the term *quality* is used or not, many job titles and careers focus on quality. Quality managers, engineers, and trainers typically earn over \$75K per year. Quality executives and Master Black Belts typically earn over \$100K per year.

The Society of Manufacturing Engineers (SME) awards the most highly recognized and valuable certifications in Lean (the Bronze, Silver, and Gold levels). Though focused on manufacturing and industry in general, SME's Lean certifications are applicable to most professions.

The Lean Six Sigma Minor covers the body of knowledge associated with both ASQ's Green Belt Certification and SME's Bronze Lean Certification. Certification is not officially tied to the minor. However, upon graduation the student can take one or both professional certification exams (at ISU or elsewhere). If the student maintained a B or better average in the minor, the student should be able to pass either exam.

The Lean Six Sigma Minor is open to any student on campus. The minor would be a valuable compliment to any major. All courses are available at a distance at least once every 2 years (usually at least once per year).

MATH 241 — Principles of Statistics (3 credits) A course for non-mathematics majors and minors. Graphical and numerical representation of data, probability, sampling, statistical inference, correlation, and regression. Prerequisite: MATH 099 or equivalent.

TMGT 361 — Quality Systems and Tools (3 credits) History, philosophy, tools, processes, and systems of quality are covered.

TMGT 374 Lean Manufacturing Systems (3 credits) The holistic study of the principles and practices of manufacturing methodologies based on maximizing value and minimizing waste in the manufacturing processes. Study includes investigation of manufacturing flow; organization for efficiency; monitoring, controlling, and improv-

ing processes of manufacturing; metrics used to measure performance; and logistics for planning and controlling flow of material.

TMGT 461 — Lean Six Sigma (3 credits) This course teaches students about the management of the Six Sigma process and the Define stage of the DMAIC SS process and relates the two to Lean. Prerequisite: TMGT 361. *Note: Open to graduate students who are required to do additional work of a research nature.*

TMGT 463 — Quality and Process Control (3 credits) Basic principles and practices of quality control. Prerequisites: TMGT 361 and MATH 241. *Note: Open to graduate students who are required to do additional work of a research nature.*

TMGT 469 — Process Analysis and Improvement (3 credits) Process analysis and improvement techniques commonly used by professionals in the quality field. Prerequisites: TMGT 361 and MATH 241. *Note: Open to graduate students who are required to do additional work of a research nature.*

TMGT 471 Production Planning and Control (3 credits) Principles of planning, scheduling, routing, and developing procedures of production control. *Note: Open to graduate students who are required to do additional work of a research nature.*

Course	Semester
MATH 241 Principles of Statistics	Fall: on campus Spring: web Summer: web
TMGT 361 Quality Systems and Tools	Spring: odd years web, even years on campus
TMGT 374 Lean Manufacturing Systems	Spring: even years web, odd years on campus
TMGT 461 Lean Six Sigma	Fall: odd years web, even years on campus
TMGT 463 Quality and Process Control	Fall: even years web, odd years on campus
TMGT 469 Process Analysis and Improvement	Spring: even years web, odd years on campus
TMGT 471 Production Planning and Control	Fall: web Spring: on campus