**CERTIFICATE IN ADVANCED MANUFACTURING MANAGEMENT**

REQUIRED COURSES (15 credit hours)

1. AMM 400 Technologies of Industry 4.0 (3 SH)
2. LSM 330 Logistics and Supply Chain Management in the Global Environment (3 SH)
3. MG 392 Manufacturing Planning in Lean Production (3 SH)
4. MG 430 Project Management Practicum (3 SH)

Plus, one course from one of the following:

AMM 301 History of Manufacturing/Industry 4.0 (3 SH)

AMM 302 Manufacturing Materials and Processes (3 SH)

MG 320 Organizational Communication (3 SH)

MG 349 Human Resources Management (3 SH)

MG 390 Operations Management (3 SH)

MG 421 Lean Six Sigma White Belt (3 SH)

SUMMARY

The manufacturing industries are transforming by advanced automation technologies and innovative processes. Huntsville owns the major manufacturing clusters of Alabama. To fit the needs of training staff needs from these industries without pursuing the undergraduate degree and developing their own professional skills, this certificate requires 15 semester hours, including a written capstone project, MG 430, based upon the practical problem solving for business and industry.

COURSE DESCRIPTIONS

* **AMM 400 Technologies of Industry 4.0** (3 SH)

Industry 4.0 is the term used to describe today's current economic paradigm, where value creation results from the management and strategic use of data rather than just resources and business processes. This course explores the innovative technologies used to collect, track, and analyze "big data" for the purposes of optimizing operations and creating value. Topics covered include Blockchain, Internet of Things (IoT), Artificial Intelligence (AI), Machine Learning, Cybersecurity, and others.

* **LSM 330 Logistics and Supply Chain Management in the Global Environment** (3 SH)

This course examines issues in managing supply chains in both the current economy and the global environment by analyzing the logistics strategies and processes necessary to ensure students understand the design and operation of global supply chain networks. In addition, the course analyzes the principles of logistics activities in the global environment with special emphasis on transportation, global sourcing, customs issues, import-export opportunities, customs documentation, the role of government in international transactions, and similar issues.

* **MG 392 Manufacturing Planning in Lean Production** (3 SH)

This course focuses on the various techniques for material and capacity planning in a lean production environment. Topics include manufacturing planning and control, master production scheduling, material requirements planning (MRP), capacity planning and utilization, production activity control, Just-In-Time (JIT) manufacturing planning, order point inventory control methods, and MPC system design and strategy.

* **MG 430 Project Management Practicum** (3 SH)

Applies the knowledge of project management in an integrative fashion within a project team environment. Course requires a written project plan and research paper or a challenging team project based upon liaison with business and industry.

Plus, one course from one of the following:

* **AMM 301 History of Manufacturing/Industry 4.0** (3 SH)

This course explores where we've been versus where we're going in manufacturing process technology and its strategic management. Topics covered include the history of manufacturing (from the age of the artisan through the first industrial revolution, mass production, automation, and computerization), the current fourth industrial revolution (Industry 4.0), and the economic, social, and political ramifications of this new industrial age.

* **AMM 302 Manufacturing Materials and Processes** (3 SH)

The fourth industrial revolution (Industry 4.0) is being led by innovations in manufacturing processes and new product materials. This course provides an overview of the core manufacturing processes used in today's factories plus the newer processes and materials that are revolutionizing the manufacturing sector. Topics covered include the identification, application, and structure of both metallic and nonmetallic materials, mechanical and thermal material properties, traditional manufacturing processes, and advanced manufacturing technologies (including additive manufacturing). This course also includes lab activities and manufacturing facility tours that provide experiential learning opportunities in the technologies introduced.

* **MG 320 Organizational Communication** (3 SH)

The purpose of this course is to enhance the student’s ability to communicate effectively and efficiently in the workplace. Assignments, exercises, and projects emphasize locating and evaluating relevant information, and communicating through writing, listening, reading, and speaking. Research, group collaboration, and intercultural communication skills are stressed in assignments and demonstrated in projects.

* **MG 349 Human Resources Management** (3 SH)

A study of the technical functions of HRM. Emphasis is on their application to programs that foster employee commitment to

objectives in a competitive, global economy. Course will explore challenges facing the HRM professional, as well as specific focus on the role of managers in the administration of HR activities. The challenges include technical functions such as recruitment and selection, training and development, design, administration of compensation and benefits plans, collective bargaining, and initiatives like quality-of-work life programs. The ways in which HRM works toward organizational goals in a time of rapid change will also be examined.

* **MG 390 Operations Management** (3 SH)

Operations Management examines manufacturing and services industries and the multitude of activities needed to produce or process goods and services in the private and public sectors. It also examines the problems of facilities layout, plant location, statistical quality control, process control, and various models utilized in these areas.

* **MG 421 Lean Six Sigma White Belt** (3 SH)

This course provides an overview of the Lean and Six Sigma methodologies and prepares learners for advancement into Yellow Belt and Green Belt programs. Topics covered include the history and fundamentals of Lean and Six Sigma, the structure of Lean Six Sigma, and the creation of problem statements.