

**Description of the Associate, Bachelor, and Master of Science Degrees in
Manufacturing Engineering Technology at OIT
(note, a non-transfer Community College AS could look a little different)**

The Associate of Science in Manufacturing Engineering Technology is focused on experiential skills of a manufacturing engineer, basic manufacturing methods, computer aided design (CAD), and basic computer numerical control (CNC) skills. The graduate attains basic proficiency in engineering subjects such as statics strength of materials, material properties, and some fundamental physics. College algebra, trigonometry, some calculus (here is the primary difference in the non-transfer CC AS degree---no calculus is required) are the mathematics requirements. Some general education and basic technical communications is attained.

An employee in industry with this degree would be classified as an engineering technician in most companies and primarily be responsible for the operation, maintenance, and/or troubleshooting of machinery with little managerial or budget responsibility. This person would be devoted to providing technical solutions usually not of a complex planning or computational nature. Career path is somewhat limited.

The Bachelor of Science in Manufacturing Engineering Technology takes the Associate of Science Degree and adds a more advanced engineering skill set, including machine design, thermodynamics, heat transfer, and robotics. Proficiency in industrial controls and automation along with advanced manufacturing methods in inventory control, quality improvement, along with lean and optimization concepts are attained. Computer simulation to improve the production process is emphasized. Additional general education and mathematics through statistical methods is required.

An employee in industry with this degree would typically be classified as an engineer. They would be tasked with challenges of a more computational nature and be required to perform more extensive planning. They would be responsible for the layout and operation of manufacturing processes, be involved in material selection and manufacturing techniques that would maximize the efficiency of bringing a product to market. Some design and analysis work would be required. Many companies would have these graduates take the role of project manager or shop floor manager. This employee would often be charged with managing workers or technicians and have budget responsibility.

The Master of Science in Manufacturing Engineering Technology adds 10-12 technical courses focused on current manufacturing issues. The graduate has a much deeper technical skill set and should be better equipped to tackle new manufacturing issues. The graduate attains a more broad knowledge on process control and optimization and depth of knowledge in the use of computer programming and computation simulation models for process improvement.

An employee in industry with the degree would be considered a manufacturing engineer and work as a general manager or a senior process engineer in a manufacturing facility. Typically this employee would be in charge of the most complex operations, planning and computational analysis tasks. They may also be a higher level manager and usually have a higher budget responsibility.