

MINIMUM CORE SUBJECT AREAS: MANUFACTURING, INDUSTRIAL & SYSTEMS ENGINEERING

AREA	SUBJECTS / DESCRIPTION	RECOMMENDED CONTACT HOURS
A recommendation of minimum 30 hours each in a minimum of 4 out of 6 areas, with at least one area from Group 1 and one area from Group 2, totaling no less than 240 hours.		
Group 1:		
1. Process / System Design	- such as product design, facilities layout, process analysis and design, service design, production systems, manufacturing technology/systems, material processing / logistic, transportation systems, smart manufacturing, robotics/automation, augmented and virtual reality.	30
2. Industrial Engineering	- such as work design, ergonomics, human factors, quality engineering, reliability engineering, production planning, operation and control, testing and certification, control and automation	30
3. Systems Engineering	- such as, e-commerce/e-business technology, smart technology/systems, internet-of-things, , intelligent systems, innovation/design thinking, knowledge management systems, enterprise systems	30
Group 2:		
1. Quantitative Method	- such as operation research, statistics / probability, simulation, system modelling / stochastic models, predictive/prescriptive/decision analytics	30
2. Engineering Management	- such as operation management, engineering economics / costing / financial technology, business process management, innovation and entrepreneurship, logistic management, material management, quality management, project management, supply chain management, safety & health management, risk management	30
3. Data Engineering	- such as artificial intelligence, data analytics, cyber-physical systems, digital twin, financial informatics, data/network security, sensing technologies, data driven technologies	30