**LESSON PLAN: ME-466-E FLEXIBLE MANUFACTURING SYSTEMS**

**Name of the Faculty: Gurvinder Singh**

**Discipline:** Mechanical Engineering

**Semester:** 8th Semester

**Subject:** Flexible Manufacturing Systems (FMS), ME-466-E

**Lesson Plan Duration:** 15 weeks (from January, 2019 to April, 2019)

**Work Load (Lecture) per week (in hours):** Lectures-03

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| Week  | Lecture Day | Syllabus |
| 1st | 1st | Automation: Types of automation, reasons for automating |
| 2nd | Automation strategies, Detroit-type automation: Automated flow lines |
| 3rd | Automated flow lines, Methods of work part transport, Transfer mechanisms. **Assignment 1 topic**: Automation |
| 2nd | 4th | Buffer storage, automation for machining operations |
| 5th | Automated assembly systems |
| 6th | Test |
| 3rd  | 7th | Design for automated assembly |
| 8th | Types of automated assembly systems |
| 9th | Part feeding devices. **Assignment 2 topic:** Automated Assembly Systems |
| 4th | 10th | Quantitative analysis of the delivery system operation |
| 11th | Analysis of a single-station assembly machine, numerical. |
| 12th | Test |
| 5th | 13th | Group Technology: Part families, parts classification and coding |
| 14th | Types of classification and coding systems.  |
| 15th | Machine cell design: The composite part concept. **Assignment 3 topic:** GroupTechnology |
| 6th | 16th | types of cell designs |
| 17th | Determining the best machine arrangement |
| 18th | Test |
| 7th | 19th | Benefits of group technology. |
| 20th | Flexible Manufacturing Systems: Components of an FMS, types of systems |
| 21st | Where to apply FMS technology, FMS work stations. **Assignment 4 topic:** Flexible Manufacturing Systems |
| 8th | 22nd | Material handling and Storage system: Functions of the handling system |
| 23rd | FMS layout configurations, Material handling equipment |
| 24th | Test |
| 9th | 25th | Computer control system: Computer function, FMS Data file, system reports |
| 26th | Planning the FMS, analysis methods for FMS  |
| 27th | Applications and benefits. **Assignment 5 topic:** Robotic technology |
| 10th | 28th | Robotic technology: Joints and links, Common robot configurations |
| 29th | Work Volume, types of robot control |
| 30th | Test |
| 11th | 31st | Accuracy and repeatability, other specifications |
| 32nd | End effectors, sensors in robotics |
| 33rd | Robot programming: Types of programming.  |
| 12th | 34th | Lead through programming, motion Programming |
| 35th | Interlocks, advantages and disadvantages |
| 36th | Test |
| 13th | 37th | Robot languages: Motion programming,  |
| 38th | simulation and off-line programming |
| 39th | Work cell control. **Assignment 6 topic:** Robot programming |
| 14th | 40th | Robot applications: Characteristics of robot applications  |
| 41st | Robot cell design |
| 42nd | Test |
| 15th | 43rd | Types Of robot applications: material handling |
| 44th | Processing operations, assembly and Inspection. **Assignment 7 topic:** Robot applications |
| 45th | Test |