Course Syllabus

Syllabus for: 

Mech 2600 Manufacturing Processes

Discipline Number Course Name

Catalog Description:

This course is a study of manufacturing improvement processes in a mechatronics system using the automation system for real world application. Topics covered will include manufacturing teams, process waste, process capability, continual improvement / kaizen activities, and basic time study methods. Emphasis is using a team project with final presentation to apply improvement methods in real world application.

Credit Hours: 4 Contact hours: 5 lab hours: 2

Prerequisites:

MECH 2100, MECH 2200, MECH 2300
Co-requisites or Prerequisites: MECH 2400, MECH 2500

Required Text(s):

The Kaizen Pocket Handbook by Kenneth W. Dailey
ISBN 9780974722160

Required Supplies/Materials: calculator, jump drive

Recommend Supplementary material: handouts as appropriate

Student Group for Who Course is Required/Intended:

Students desiring to obtain a General Technology AAS, or a Mechatronic Technology concentration AAS.

Student Learning Outcomes: These should be specifically stated, measurable learner outcomes to be met throughout the course.

Upon completion of the course, students will demonstrate the ability to:

1. Understand the roles of a cross-functional team approach and the benefits of a team

2. Understand what factors make up decision making for a continuous improvement activity.
3. Analyze overall product quality and process capability of a system.

4. Understand continual improvement system and how to apply to a system project.

5. Read, analyze and utilize the technical documents such as data sheets, timing diagrams, operation manuals, schematics for continual improvement activities.

6. Ability to use kaizen and basic time study methods on a Mechatronics’ system.

7. Ability to give power point presentations as a process improvement team to a technical group.

8. Ability to use previous class knowledge in a Mechatronics’ system team project

9. Ability to error proof a system from concept to implementation

10. Apply safety rules while working on the system

**Suggested Evaluation Plan:**

<table>
<thead>
<tr>
<th>TASK</th>
<th>WEIGHT</th>
<th>OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final project demo &amp; presentation</td>
<td>50%</td>
<td>All</td>
</tr>
<tr>
<td>Lab work and participation</td>
<td>20%</td>
<td>All</td>
</tr>
<tr>
<td>Pen Factory presentation</td>
<td>20%</td>
<td>All</td>
</tr>
<tr>
<td>Quiz</td>
<td>10%</td>
<td>All</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>All</td>
</tr>
</tbody>
</table>

**Grading Plan:**

The grading scale for all examinations and the final course grade will be based on the following percentages:

- A = 90-100%
- B = 80-89%
- C = 70-79%
- D = 60-69%
- F < 60%
Class and Lab Policies:

- Please comply with all regulations and rules set by Motlow regarding the rights others and keeping our campus safe.
- No make-up sessions will be given for unexcused absence(s).
- **Attendance is required.** Each tardy will result in 1 point being deducted from the 10 percentage points associated with your lab grade. Each absence will result in 2 points being deducted from the 10 percentage points associated with your lab grade. Each tardy or absence will be evaluated on its own merit and maybe excused with proper justification at the sole discretion of the instructor. Prior notification is highly recommended for planned absences. Attendance will be taken each class period.
- It is your responsibility to regularly check your default MSCC email address to be aware of any important/emergency notice about the course or class schedule.
- Neatness counts. Please submit neat homework and class work. Points may be deducted if your exam or work paper is unreadable or not neat and organized. You should always show your work for problem sets especially exam questions.
- Team work and class participation: You are encouraged to participate in class and in the labs and to demonstrate an ability to function in a team environment. The instructor reserves 5 points of the 10 percentage points associated with your lab grade to be awarded based on observations in the class and lab.
- Lab work. All lab work should be completed fully within one class period of the lab day. Lab work will be submitted at the request of the instructor for evaluation and grading. Students will be asked to work in teams and expected to fully comply with this requirement.

Safety Rules and Measures:

Because of the nature of your training, it is extremely important to follow the safety guidelines at all times. Some of the rules and measures that you must follow are listed below.

1. Safety glasses will be worn at all times when in the lab.
2. Hearing protection may be required for certain lab experiments.
3. Metal watches, jewelry or finger rings will not be worn while in the lab. Ties or other items (e.g. necklaces) which might become tangled in rotating equipment will not be worn or must be secured inside your clothing.
4. If you have long hair, you must tie it up or put it in a cap.
5. Avoid loose clothes and other items of attire which might become tangled in rotating equipment.
6. Shirt and blouses will have sleeves at least to the elbow part of the arm. Pants or other types of clothing covering the lower part of the body **must** come below the knees.
7. Shoes must have a closed toe.
8. Make sure the floor is dry before you start and stays dry during the lab session. Notify the instructor if the floor is wet or greasy.
9. Familiarize yourself with the location of the emergency stop buttons before you start your lab session.
10. Some labs may require wearing electrically-insulating gloves. Please be aware when they are needed.
10. Inform other students around you and your group members, if you are working in a group, before you plug in or operate, or turn on any electrical equipment, in particular electric motors, and make them aware of that.
11. Lockout/Tagout procedures must be followed when working with voltages higher than 24 volts (ac or dc) or currents in excess of 2 amps.

General Policies

- Students with Disabilities. Qualified students with disabilities will be provided reasonable and necessary academic accommodations if determined eligible by the Director of Disability Services. For more information, contact Sonya Hood at 931-393-1765 or go to http://www.mscc.edu/disability/.
- Cell Phone and Computer Use during Class. Cell phones will be in silent mode and placed in a non-visible location. If you are expecting an urgent call, please notify the instructor prior to class and exit the classroom with minimal disturbances when the call is received. No texting or other communication will be allowed during class. Computers in class will be used for class instruction only. If caught Texting, you will lose 2% of your lab grade at every occurrence. (with or without notification)
- Library and Computer Resources. Libraries at all Motlow site are available to all students enrolled at the college. Links to library materials are available at www.mscc.edu/library/index.html.
- Dropping Class Without a Grade - To drop a class, go to MyMotlow from www.mscc.edu. If you drop before the “W” date, no grade will be recorded. If you discontinue active participation in the class but do not complete the proper drop procedure, you will most likely receive an “F” in the class. Dropping a class may affect your eligibility for future financial aid.
- Financial Aid Students. Students receiving financial aid, who stop actively participating in class without officially dropping the class, may be subject to repayment of some or all of the money received. Notification to the Financial Aid office is required if you stop participating. Dropping or failing a course may affect your future ability to receive financial aid.
- Technical Support. For assistance with technical problems related to D2L (the online software), a Motlow computer, or the Motlow website call Help Desk at 1-800-654-4877, ext. 1510. Neither Motlow Tech Support nor your instructor can assist you with home computer repair or software issues other than D2L use or student email issues.
- Inclement Weather: The best way to get class cancellation information is to sign up for Motlow’s RAVE alert on the Motlow website to receive a text message and email. This information will also be posted on the Motlow website and announced on the local television and radio stations by 6:30 am for day classes and by 4:30 pm for evening classes. Please do not call the school.
## INSTRUCTIONAL SCHEDULE
For Manufacturing Process

<table>
<thead>
<tr>
<th>Days</th>
<th>Objective Numbers</th>
<th>Content to be Covered</th>
<th>Student Assignments/Supplementary Material(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>1, 4, 8, 9, 10</td>
<td>Introduction manufacturing Setup teams for pen project Define System requirements for team project Pen Factory part 1</td>
<td>Pen Factory handout Process mapping handout The Pocket Handbook</td>
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<tr>
<td>Week 2</td>
<td>1, 2, 6, 8, 10</td>
<td>Pen factory part 2 Kaizen Pocket Handbook</td>
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<tr>
<td>Week 3</td>
<td>1, 4, 5, 6, 8, 9</td>
<td>Roles of a cross function team Process Analysis (Time Study) Team Project work time (time study) KPI Pen factory Presentation</td>
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<tr>
<td>Week 4</td>
<td>1, 4, 5, 6, 8, 9</td>
<td>Team project work time</td>
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<tr>
<td>Week 5</td>
<td>3, 4, 5, 6</td>
<td>Continual Improvement Team Project work time</td>
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<tr>
<td>Week 6</td>
<td>3, 4, 5, 6</td>
<td>Quality &amp; Time study assessment Team Project work time (SPC)</td>
<td></td>
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<tr>
<td>Week 7</td>
<td>3, 4, 5, 6</td>
<td>Process Capability Kaizen activities Team Project work time (kaizen)</td>
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<tr>
<td>Week 8</td>
<td>1, 7</td>
<td>Technical presentation skills Team Project work time (presentation &amp; analysis)</td>
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<tr>
<td>Week 9</td>
<td>10</td>
<td>Team Project Work Time</td>
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<td>Days</td>
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<tr>
<td>Week 10  10</td>
<td>Team Project Work Time</td>
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<tr>
<td>Week 11  1-10</td>
<td>Team Project Work Time</td>
<td></td>
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<tr>
<td>Week 12  1-10</td>
<td>Team Project Work Time</td>
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<tr>
<td>Week 13  1-10</td>
<td>Team Project Work Time</td>
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<tr>
<td>Week 14  1-10</td>
<td>Review of Final Team project with Instructor</td>
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<tr>
<td>Week 15  1-10</td>
<td>Final project demo &amp; Presentation</td>
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