Modesto Junior College
Course Outline of Record
CGR 223

I. OVERVIEW
The following information will appear in the 2009 - 2010 catalog

CGR-223 Lithographic & Flexographic Presses 3 Units
Formerly listed as: CGR - 223: Printing Presses and Bindery 2
Beginning skills in the operation of Lithographic Offset Presses an Flexographic Web Press. Students will be required to print multi colored work and produce 2,000 or more copies in a final 3 hour lab. Field trips might be required. Course is applicable to the associate degree.

II. LEARNING CONTEXT
Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

A. COURSE CONTENT

1. Required Content:

   A. Lithographic Theory
      1. Ink and Water
      2. Feeder systems
      3. Printing section
      4. Delivery section
   
   B. Calculate the quantity of ink and press sheets needed to complete a prescribed single page press run.

   C. PH factors involved with lithographic press

   D. Press printing procedures
      1. feeder check
      2. image position check
      3. registration check
      4. cleanup check

   E. Feeder systems
      1. types and components
      2. adjustments

   F. Delivery systems
      1. types and components
      2. adjustments

   G. Dampening systems
      1. types and components
      2. adjustments

   H. Ink systems
1. types and components
2. adjustments

I. Register table systems
   1. types and components
   2. adjustments

J. Registration
   1. definition
   2. procedure
   3. multiple-color

K. Press chemistry
   1. dampening
   2. ink

3. Printing unit

L. Press maintenance
   1. lubrication
   2. cylinders
   3. rollers

M. Image carriers
   1. types
   2. exposure
   3. processing
   4. mounting

N. Flexographic Press
   1. Image carriers
      a. types
      b. exposure
      c. processing
      d. mounting
   2. Unwind
      a. webbing
      b. alignment/position
      c. rewind
   3. Ink setup
      a. annilox rolls
      b. nip roll settings
      c. doctor blade settings
      d. ink pan
      e. ink adjustment of annilox/doctor blade
   4. Printing section
      a. plate installation
b. set impression  
c. set ink amount  
d. reset impression  
5. Registration  
   a. color registration  
   b. die registration  
6. Finishing  
   a. die cutting  
   b. underscore  
   c. stripping label material  
   d. counts  
   e. rewind  
   f. cleanup check  
O. Pre-run preparation  
   1. press sheets calculations  
   2. ink consumption calculations  
   3. press dummy or proof  
   4. counts (flexo) and rolls  

2. **Required Lab Content:**

A. Lithographic press  
   1. Safety  
   2. Preparation/manuals  
   3. Feeding  
   4. Stripping, Printing and cleaning  
   5. Position lab  
   6. Registration lab (spot color)  
   7. Position lab  
   8. Registration lab duotone  
   9. Production lab  
  10. Envelope lab  
B. Flexographic web press  
   1. Safety  
   2. Preparation/manuals  
   3. Webbing  
   4. Printing  
   5. Finishing  
      a. die cutting  
      b. underscore
c. stripping waste material
d. perforating and sheeting

6. Plate making
7. Plate mounting
8. Ink Ph
9. Water base ink, UV ink
10. Registration
11. Off press rewinding an finishing
12. Cleanup and annilox roller care
13. Doctor blade care

B. ENROLLMENT RESTRICTIONS

C. HOURS AND UNITS

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<th>TERM HOURS</th>
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D. METHODS OF INSTRUCTION (TYPICAL)
Instructors of the course might conduct the course using the following method:

1. Related materials will be presented through combined lecture, discussion, and lab demonstrations.
2. Computer-assisted activities will be completed to develop skills in related topics.
3. Additional studies will be required from instructional manuals specific to equipment employed.
4. Mastery of each unit will be demonstrated by the completion of related lab projects.
5. In addition to course text, technical manuals will be studied to ascertain individual machine operation.
6. Simulated maintenance will be conducted on varied pieces of equipment to correlate theory to practical application.
7. Audio visual presentations will augment lecture (film, slides, video, PowerPoint, transparencies etc.).
8. Guided tours of printing plants/businesses and related plants such as a paper mill.

E. ASSIGNMENTS (TYPICAL)

1. **EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS**
   Time spent on coursework in addition to hours of instruction (lecture hours)
   1. Reading weekly in Lithographic Technology text.
   2. Reaiing in the Flexographic manual weekly during 7 week rotation.
   3. Homework from chapters bi weekly.
   4. Research assignment per term.
2. **EVIDENCE OF CRITICAL THINKING**
   *Assignments require the appropriate level of critical thinking*
   1. Given a press sheet with two spot colors give the directions to properly position the second color to the first color.
   2. Given a Parent size sheet of 25 x 38 calculate the number of press sizesheets 8 x 10 can be cut from the parent size sheet and how many parent sheets will be needed to print 100,000 copies.
   3. Draw and label the Printing section of the press, to include cylinders, rollers, fountains.
   4. Research the causes of Slur on a printed sheet and give the possible solutions.
   5. In lab set up and position a two color project to industry standard.
   6. When a press problem arises the student will research the problem and give parts that may be needed to repair the press and install when delivered.

F. **TEXTS AND OTHER READINGS (TYPICAL)**

III. **DESIRED LEARNING**

A. **COURSE GOAL**
   *As a result of satisfactory completion of this course, the student should be prepared to:*

   Set up and run the Flexographic web press printing 1 to 4 colors and finishing them into rolls meeting industry standards. Student will be able to set up and run the Lithographic Offset duplicator printing 2,000 or more copies in a 3 hour lab and clean up meeting industry standards.

B. **STUDENT LEARNING GOALS**
   *Mastery of the following learning goals will enable the student to achieve the overall course goal.*

   1. **Required Learning Goals**
      *Upon satisfactory completion of this course, the student will be able to:*

      a. Apply the properties of lithographic, and flexographic, and theory to specific problems.
      b. Measure pressure settings for roller and cylinder settings.
      c. Categorize ink and paper types and correlate each to the press running characteristics.
      d. Distinguish between the various image carriers, outline the exposure control methods and processing steps related to each.
      e. Describe the various types of registration systems used in a press plates. Complete a press run using each registration system on a two-color and four-color project.
      f. Measure pH factors of various chemicals, and identify those that meet acceptable range. Explain how pH affects the quality of print.
      g. Troubleshoot for press problems during actual press run. Identify the problem(s) in written format and describe steps taken to resolve situation.
      h. Set up and feed a variety of paper sizes and weights.
i. Clean the press, to include: fountain, fountain roller, doctor roller, water system, plate cylinder, blanket cylinder, impression cylinder, and the general press area.

j. Check the PH of the water base ink used in Flexographic printing.

k. Web the Flexographic press for water base inks and UV inks.

l. Set up the finishing section of the Web press for die cutting and underscoring or slitting for a specific job.

m. Select the proper anilox rolls for the work to be printed.

n. Make and mount their own plates.

o. Set up the printing section of the press to include: anilox rolls, ink pans, meter roll adjustment, doctor blade adjustment, and plate cylinder.

p. Set the plate impression, then the ink, and reset the plate impression.

q. Position and register two or more colors to the die and color to color.

r. Count and rewind finished printed product.

2. **Lab Learning Goals**

*Upon satisfactory completion of the lab portion of this course, the student will be able to:*

a. Offset Printing Feed all varieties of paper without assistance.

b. Print a live job with industry standard registration and control of quality print for 2,000 or more copies without assistance.

c. Flexographic press set up and print with tight registration and finish 5,000 labels in a 3 hour lab.

IV. **METHODS OF ASSESSMENT (TYPICAL)**

A. **FORMATIVE ASSESSMENT**

1. Demonstrated skill performance

2. Descriptive lab analysis

3. Group task analysis/troubleshooting

4. Problem-solving techniques

5. Product mockup creation

6. Small group class presentations

7. Task performance ratings

8. Written examinations to include essays

9. Written systems diagnosis/recommendations

B. **SUMMATIVE ASSESSMENT**
1. At the completion of a lab rotation the student will be able to Print 2-4 colors in acceptable industry registration.

2. Final examination

3. Mid term examination