This course outline includes a course description and rationale, objectives, an outline of content, evaluation suggestions, resources for students, and a bibliography. The course is suggested for prevocational students in grades 9-12. Course content ranges from a definition and background section, to preparation and handling and forming gem stones. At the end of the course the student should, among other things, be able to: 1) identify the work of several outstanding contemporary lapidists; 2) demonstrate the method of preparing and handling gem stones in tumbling and polishing; 3) demonstrate the method of gem tumbling and polishing; 4) demonstrate the method of gem cutting. Resources for students tools and equipment used for tumbling and cutting. Resources for students include books, periodicals, suggested places to visit, and professional schools, universities, and workshops specializing in lapidary. (JLB)
AUTHORIZED COURSES OF STUDY FOR THE QUINMESTER PROGRAM
DADE COUNTY PUBLIC SCHOOLS

ART EDUCATION
Gem Treasures
6681.23

DIVISION OF INSTRUCTION•BULLETIN 1Q•JANUARY 1972
GEM TREASURES (Lapidary I)
(Tentative Course Outline)
6681.23
6682.23
6683.26

ART EDUCATION

Written by: Louis M. Marin
for the
DIVISION OF INSTRUCTION
Dade County Public Schools
Miami, Florida
1971
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I. COURSE TITLE

GEM TREASURES (Lapidary I)

II. COURSE NUMBERS

6681.23
6682.23
6683.26

III. COURSE DESCRIPTION

Exploratory and creative techniques and processes in cutting, shaping, polishing and setting precious and semiprecious rocks and gems. Useful and decorative objects are produced by students.

IV. RATIONALE

Lapidary materials have occupied an important place in man's life for many centuries. Useful and decorative objects made from precious and semiprecious rocks and gems have been esthetically pleasuring to individuals from the Neolithic period until the present. Industrial firms use gems for certain functions in manufacturing. Contemporary application of lapidary materials are as diversified as any material which is used creatively.
V. COURSE ENROLLMENT GUIDELINES
   A. Pre-vocational
   B. Recommended for grades 9-12
   C. No prerequisite

VI. COURSE OF STUDY OBJECTIVES

Competencies expected of the student upon completion of the behavioral objectives of this course in writing or orally:

A. **Definition and background**
   The student will be able to:
   1. Define the term lapidary.
   2. Identify the work of several outstanding contemporary lapidists.

B. **Preparation and handling of gem stones**
   The student will be able to:
   1. Demonstrate the method of preparing and handling gem stones for tumbling and polishing.
   2. Differentiate between the method of tumbling gem stones and the method of cutting gem stones.

C. **Gem stone forming**
   The student will be able to:
   1. Demonstrate the method of gem tumbling and polishing.
2. Demonstrate the method of gem cutting and grinding.
3. List the tools and equipment used for gem tumbling and gem cutting.

VII. COURSE CONTENT

A. Definition and background

1. Historical
   a. Egypt
   b. Ancient Near East
   c. Asia
      (1) India
      (2) China
      (3) Korea
      (4) Japan
   d. Classical
      (1) Crete
      (2) Greece
      (3) Etrusca
      (4) Rome
   e. Byzantium (Rome)
   f. Islam
   g. Pre-Columbian
   h. Renaissance in Europe

2. Contemporary
   a. American Indian
b. Outstanding contemporary lapidists
   (1) Leo Scherker
   (2) Friedrich Becker
   (3) Sigurd Persson
   (4) George Jensen
   (5) Erik Herlow
   (6) Manuel Feli Via
   (7) Elisabeth Treskow
   (8) Jean Schlumberger
   (9) Fulco duca di Verdura
   (10) Margaret De Patta
   (11) Rheinholt Reiling

c. Aesthetic reaction and movement

3. Preparation and handling of gem stones

   1. Methods of preparing and handling gem stones for tumbling and polishing.
      a. Cleaning
      b. Sealing
      c. Inspecting
      d. Storing

   2. Methods of preparing and handling gem stones for cutting and grinding.
      a. Brushing
      b. Cleaning
      c. Inspecting
3. Selection of gem stones
   a. Select gem stones according to size.
   b. Select gem stones according to hardness.
   c. Hardness rated by Mohs scale 1-10.
   d. Gem stones generally tumbled are in the 5 to 8 hardness group.

4. Standard sizes for rocks (Clark scale)
   a. 1 millimeter or less - particle
   b. 1 millimeter to 1/8 inch - fragment
   c. 1/8 inch to 2-1/2 inches - pebble
   d. 2-1/2 inches to 10-1/2 inches - cobble
   e. Above 10-1/2 inches - boulder

5. Types of gem stones
   Diamond                      Scapolite
   Spinel                        Epidore
   Topaz                         Pyrite
   beryl                         Nephrite jade
   Zircon                        Orthoclase
   Rhodolite                     Beryllonie
   Pyrope garnet                 Opal
   Andalusite                    Glass
   Quartz                        Lapis Lazuli
   Peridot                       Obsidian
   Jadeite jade                  Apatite
   Idocrase                      Kyanite
Hematite  
Fluorite  
Azurite  
Jet  
Calcite  
Serpentine  
Amber  
Gypsum  
Steatite (Soapstone  
Talc

C. Gem stones forming

1. Methods of forming

a. Gem tumbling and polishing

(1) Washing  
(2) Breaking  
(3) Loading  
(4) Running: Rough Grind  
(5) Removing  
(6) Washing  
(7) Reloading  
(8) Running: Intermediate Grind  
(9) Removing  
(10) Washing  
(11) Reloading  
(12) Running: Fine Grind  
(13) Removing  
(14) Reloading  
(15) Running  
(16) Polishing  
(17) Final washing
b. Gem cutting and grinding
   (1) Washing
   (2) Sawing - Slabling
   (3) Scribing
   (4) Trimming
   (5) Grinding
   (6) Dropping
   (7) Sanding
   (8) Polishing
   (9) Drilling

c. Cabochon cutting
   (1) Oldest technique
   (2) Simplest cut
   (3) Dome shape
   (4) Opaque stone
   (5) Translucent stone
   (6) Varied geometric outlines
   (7) Smooth surfaced
   (8) Ranges in size and shape from
       a low, round, flat-based cabochon
       to a high-domed oval double
       cabochon.

d. Facet cutting
   (1) Usually cut and polished into
       facets or flat planes.
(2) Reflect and transmit light
(3) Varied geometrical shapes
(4) Opaque stones sometimes faceted

2. Forming jewelry with a cabochon cutting.
3. Creating a ring with a facet cutting.
4. Creating a choker by combing facet and cabochon cutting.
5. Creating jewelry with gems which have been tumbled and polished.
6. Creating a variety of jewelry by using rough gem stones.
7. Forming jewelry by using tumbled and polished gem stones.
8. Equipment and tools
   Combination polishing and sawing unit
   Polishing felts
   Grinding wheels
   Tin laps
   Rubber polishing wheels
   Laps
   Sanding discs
   Diamond saw
   Tin oxide
   Carbo grains
   Rouge
<table>
<thead>
<tr>
<th>Material</th>
<th>Supplier Information</th>
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<tbody>
<tr>
<td>Tripoli</td>
<td>M. D. R. Manufacturing Company</td>
</tr>
<tr>
<td>Chrome oxide</td>
<td>4853 W. Jefferson Boulevard Los Angeles 16, California</td>
</tr>
<tr>
<td>Dropping sticks</td>
<td>Graftool, Inc.</td>
</tr>
<tr>
<td>Soluble oil</td>
<td>1 Industrial Road Woodridge, N. Y.</td>
</tr>
<tr>
<td>Facet head</td>
<td>Technicraft Lapidaries Corporation</td>
</tr>
<tr>
<td>Templet</td>
<td>3560 Broadway New York 31, N. Y.</td>
</tr>
<tr>
<td>Diamond dresser</td>
<td>Vreeland Manufacturing Company</td>
</tr>
<tr>
<td>Wooden scrub brush</td>
<td>4105 N. E. 68th Avenue Portland 13, Oregon</td>
</tr>
<tr>
<td>Bench vise</td>
<td>Diamond Sales Company</td>
</tr>
<tr>
<td>Plaster of paris</td>
<td>117 N. E. 1st Avenue Miami, Florida</td>
</tr>
<tr>
<td>Water soluble coolant</td>
<td>Gem-Hut Company</td>
</tr>
<tr>
<td></td>
<td>9848 Bird Road Miami, Florida</td>
</tr>
</tbody>
</table>

### D. Lapidary suppliers

- **M. D. R. Manufacturing Company**
  4853 W. Jefferson Boulevard
  Los Angeles 16, California

- **Graftool, Inc.**
  1 Industrial Road
  Woodridge, N. Y.

- **Technicraft Lapidaries Corporation**
  3560 Broadway
  New York 31, N. Y.

- **Vreeland Manufacturing Company**
  4105 N. E. 68th Avenue
  Portland 13, Oregon

- **Diamond Sales Company**
  117 N. E. 1st Avenue
  Miami, Florida

- **Gem-Hut Company**
  9848 Bird Road
  Miami, Florida
Gemrock Unlimited
9848 Bird Road
Miami, Florida

Graves, Henry B. Company
2301 N. W. 8th Avenue
Miami, Florida

Rock and Shell Shop
2036 S. W. 57th Avenue
Miami, Florida
VIII. EVALUATION

It is essential to establish a criteria for evaluating the progress of the student in an art experience. Evaluation in lapidary art cannot be rigid to the extent that it will inhibit creative expression. Creativity is unique and personal.

The product itself cannot be evaluated without taking into consideration the process the student experienced from inception to completion. In addition, evaluation must include evidence of the growth of the individual in relation to his attitude, interest, ability to complete a project, how well he can use his past experience toward problem solving, respect for his own ability and the rights of others.

Evaluation is of vital importance to the student's development. It helps to determine the growth of the student so that the teacher can further motivate and guide the student toward his fullest self-development, creativity and aesthetic growth.

The criteria established for evaluation will vary due to individual differences among students and teachers. Each teacher must determine his own goals
and formulate standards for evaluation always keeping in mind that evaluation must be positive as well as constructive.

The following are some suggestions in setting up criteria for evaluation:

1. Has the student learned to evaluate his own gem stones as well as that of others with consideration to the sensuous quality of the gem form, and content?
2. Has the student designed the entire object with an awareness of space, form, movement, order, relationship of parts to the whole, and good color organization?
3. Has the student expressed his ideas creatively in the medium in an original and meaningful way?
4. Has the student developed a sensitivity to the material?
5. Does the student express his ideas and individuality in lapidary art?
6. Has the student become aware that texture results from an interaction of the medium and the tools?
7. Is the student aware of the difference between tactile and visual textures?
8. Has the student become sensitive to the expressive qualities of the different lapidary materials and tools?

9. Is the student aware that improper use of material and tools results in poorly constructed forms?

10. Is the student aware that variety can add interest to forms but too much can destroy it?

11. Does the student react empathically to the medium in terms of three-dimensional forms?

12. Is the student familiar with good lapidary art of the past and present?

13. Is the student able to identify from contemporary lapidists the ways in which the craftsmen manipulate their tools and materials?

14. Has the student developed good work habits?

15. Has the student's behavior outside the art class improved as a result of his art experience?

16. Has the student developed a respect for his personal ability?

17. Has the student developed a respect for the rights of others?
18. Has the student acquired increased efficiency in handling materials and tools?
19. Has the student developed the ability to carry the project through to completion?
20. Has the student learned the firing process and how to use it to its fullest advantage?
21. Has the student developed good craftsmanship and yet retained the natural qualities of the gem stone?
22. Has the student learned to cut a gem stone correctly so it does not warp or crack?
23. Is the product suited for the purpose for which it was made?
24. Does it incorporate the principles of good lapidary design?
25. Is the product the one best suited for work in lapidary art?
26. Is the product well-constructed?
27. Does the product indicate individuality and expressive quality?
28. Does the design fit the form?
29. Has the student improved in attitude, interests, and development of technical skills?
IX. RESOURCES FOR PUPILS

A. Books


B. Suggested periodicals for pupils

The Lapidary Journal
Del Mar, California

Craft Horizons
29 West 53rd Street
New York, N. Y. 10019

School Arts
50 Portland Street
Worcester, Mass. 01608

Design Quarterly
1710 Lyndale Avenue
Minneapolis 3, Minn.

C. Suggested places to visit

Grove House School of Art
3496 Main Highway
Coconut Grove, Fla. 33133

Village Corner Gallery
1136 South Dixie Highway
Coral Gables, Florida

Lowe Art Museum
1301 Miller Drive
Coral Gables, Florida

Miami Art Center
7867 North Kendall Drive
Kendall, Florida

Ceramic League of Miami
7867 North Kendall Drive
Kendall, Florida

Miami Museum of Modern Art
381 N. E. 20th Street
Miami, Florida

Grove House Gallery
3496 Main Highway
Coconut Grove, Florida
Museum of Science-Planetarium
3280 South Miami Avenue
Miami, Florida

Fairchild Tropical Garden
10901 Old Cutler Road
Coral Gables, Florida

Fantastic Gardens
9550 S. W. 67th Avenue
Miami, Florida

Miami Seaquarium
Rickenbacker Causeway
Virginia Key, Florida

Cranon Park Zoo
Key Biscayne, Florida

Scholastic Art Awards Exhibition
Burdine's Department Store
27 East Flagler Street
Miami, Florida

Miami Studio Shop
2363 West Flagler Street
Miami, Florida

Bass Museum of Art
2100 Collins Avenue
Miami Beach, Florida

Japanese Gardens
MacArthur Causeway
Miami, Florida

D. Professional schools, universities, and workshops specializing in Lapidary

University of California
Department of Design
234 Wurster Hall
Berkeley, California

University of California
Davis, California

Mills College
Oakland, California
San Jose State College
San Jose, California

California College of Arts & Crafts
5212 Broadway at College Avenue
Oakland, California

University of Colorado
School of Art
Denver, Colorado

The Corcoran School of Art
17th Street at New York Avenue, N. W.
Washington, D. C.

School of the Art Institute of Chicago
Michigan at Adams
Chicago, Illinois

University of Illinois
College of Fine & Applied Arts
143 Fine Arts Building
Urbana, Illinois

Haystack Mountain School of Crafts
Deer Isle, Maine

Boston Museum School
230 Fenway
Boston, Massachusetts

Rochester Art Center
320 East Center
Rochester, Minnesota

Neward Museum of Art
43-49 Washington Street
Newark, New Jersey

Brooklyn Museum Art School
Eastern Parkway
Brooklyn, New York

Craft Students League
840 Eighth Avenue
New York, N. Y.

The New School for Social Research
66 West 12th Street
New York, N. Y.
School for American Craftsmen  
Rochester Institute of Technology  
65 Plymouth Avenue, South  
Rochester, New York

Syracuse University  
School of Art  
309 University Place  
Syracuse, New York

Penland School School of Crafts  
Penland, North Carolina

Cleveland Institute of Art  
11141 East Boulevard  
Cleveland, Ohio

Rhode Island School of Design  
Providence, Rhode Island

Museum School of Art of Houston  
1061 Bissonnet  
Houston, Texas

Wisconsin State University  
River Falls, Wisconsin

Baerwald, Marcus and Mahoney, Tom, Gems and Jewelry Today, New York: Marcel Rodd., 1949.


Shipley, Robert W., Dictionary of Gems and Jewelry, Los Angeles: Gemological Institute of America.


