



8840

ADVANCED GEM
SETTING (12D)

40S/40E/40M

A Jewellery/Metalsmithing Course

8840: ADVANCED GEM SETTING (12D) 40S/40E/40M

Course Description

This course is intended for students entering the transition phase of the jewellery and metalsmithing program. The curriculum content focuses on an extension of the knowledge and skills learned in course 8837 (Gem Setting), including pearls, rubbed settings, and channel settings. Students use these materials and processes to create jewellery that includes set stones.

Goal 1: Describe and apply appropriate **safety and health** practices as they apply to the jewellery/metalsmithing trade.

GLO 1.1: Create and maintain a **safe workplace**.

- SLO 12D.1.1.1: Follow safe practices and procedures related to facilities, processes, materials, tools, and equipment used in the jewellery studio.
 - SLO 12D.1.1.2: Apply the principles of Workplace Hazardous Materials Information Systems (WHMIS) as they apply to the jewellery studio.
 - SLO 12D.1.1.3: Describe hazards related to processes, materials, tools, and equipment used in the jewellery studio.
 - SLO 12D.1.1.4: Follow the directions of the teacher/supervisor/employer in regard to safe work procedures.
 - SLO 12D.1.1.5: Comply with the laws, regulations, and standards of regulatory agencies and industry associations regarding safety.
 - SLO 12D.1.1.6: Locate first aid kit, eyewash station, fire extinguisher, fire blanket, and emergency power shut off switch.
 - SLO 12D.1.1.7: Demonstrate ventilation procedures, and dust and smoke reduction procedures.
 - SLO 12D.1.1.8: Demonstrate fire prevention and control strategies.
 - SLO 12D.1.1.9: Describe emergency evacuation and response procedures.
 - SLO 12D.1.1.10: Demonstrate safety zone markings and procedures.
 - SLO 12D.1.1.11: Discuss hazards related to compressed gas.
 - SLO 12D.1.1.12: Identify and report hazards (e.g., handling, chemicals, electrical, ergonomics, material handling, spills, and equipment damage) related to tools, equipment, processes, and materials in studio.
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GLO 1.2: Create and maintain **safe and healthy workplace practices.**

- SLO 12D.1.2.1: Explain the chemical points of entry into the body.
- SLO 12D.1.2.2: Describe and demonstrate appropriate personal protection (e.g., safety goggles/facemask, gloves, respirator mask, hair ties, apron, hearing protection).
- SLO 12D.1.2.3: Describe the injury reporting process.
- SLO 12D.1.2.4: Describe the use of fire blankets and fire extinguishers.
- SLO 12D.1.2.5: Describe the use of an eyewash station.
- SLO 12D.1.2.6: Demonstrate the ergonomic use of equipment and tools as it relates to bench tools and equipment operation.

Goal 2: Demonstrate knowledge of the identification, and the safe and appropriate **operation, cleaning, maintenance, and management of equipment, tools, and materials.**

GLO 2.1: Demonstrate the **identification**, and the safe and appropriate **operation of equipment and tools.**

- SLO 12D.2.1.1: Describe hand tools, power tools, equipment, and materials as they pertain to advanced gem setting.
- SLO 12D.2.1.2: Demonstrate the safe and appropriate operation of hand tools as it pertains to advanced gem setting.
- SLO 12D.2.1.3: Demonstrate the safe and appropriate operation of torch as it pertains to advanced gem setting.
- SLO 12D.2.1.4: Demonstrate the safe and appropriate use of the polishing/buffing machines as it pertains to advanced gem setting.
- SLO 12D.2.1.5: Demonstrate the safe and appropriate use of the flex-shaft.

GLO 2.2: Demonstrate the appropriate cleaning, maintenance, and management of equipment and tools.

- SLO 12D.2.2.1: Demonstrate the daily cleaning, maintenance, and management of equipment and tools as they pertain to advanced gem setting.
 - SLO 12D.2.2.2: Discuss the scheduled cleaning, maintenance, and management of equipment and tools as they pertain to advanced gem setting.
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GLO 2.3: Demonstrate the appropriate **handling, storage, and management of materials.**

SLO 12D.2.3.1: Demonstrate the appropriate handling, storage, and management of materials and supplies as they pertain to advanced gem setting.

Goal 3: Demonstrate an understanding of **metallurgy, gemmology, and the characteristics of jewellery materials.**

GLO 3.1: Demonstrate an understanding of **metallurgy.**

SLO 12D.3.1.1: Demonstrate an understanding of the characteristics of metals as they pertain to advanced gem setting.

GLO 3.2: Demonstrate an understanding of **gemmology.**

SLO 12D.3.2.1: Demonstrate precautions and appropriate care of gem materials as they pertain to advanced gem setting.

GLO 3.3: Demonstrate an understanding of the **characteristics of jewellery materials.**

SLO 12D.3.3.1: Apply the principles of material characteristics to advanced gem setting.

Goal 4: Demonstrate knowledge of the creative **design** of jewellery.

GLO 4.1: Demonstrate knowledge of the creative **design** of jewellery.

SLO 12D.4.1.1: Identify the design problem as it pertains to advanced gem setting.

SLO 12D.4.1.2: Research the factors that influence design as they pertain to advanced gem setting.

SLO 12D.4.1.3: Recognize and apply the elements of design as they pertain to advanced gem setting.

SLO 12E.4.1.4: Identify the function of the design as it pertains to advanced gem setting.

SLO 12D.4.1.5: Identify the limitations of the materials as they pertain to advanced gem setting.

SLO 12D.4.1.6: Develop concept drawings for construction based on design criteria as they pertain to advanced gem setting.

Goal 5: Demonstrate an understanding of the **construction, casting, incorporation of components and gemstones, and production techniques** of jewellery creations.

GLO 5.1: Demonstrate the **construction techniques** used in creating jewellery from **sheet and wire**.

- SLO 12D.5.1.1: Demonstrate the basic operation of tools and equipment used in jewellery construction using sheet and wire as it pertains to advanced gem setting.
 - SLO 12D.5.1.2: Demonstrate the production of sheet from ingots using a rolling mill.
 - SLO 12D.5.1.3: Demonstrate the safe and appropriate use of the pickle pot.
 - SLO 12D.5.1.4: Demonstrate an understanding of soldering techniques as they pertain to advanced gem setting.
 - SLO 12D.5.1.5: Demonstrate the production of wire from ingots using a rolling mill and drawplates.
 - SLO 12D.5.1.6: Demonstrate the safe and appropriate use of a torch for annealing and soldering.
 - SLO 12D.5.1.7: Demonstrate the safe and appropriate use of burs for advanced gem setting.
 - SLO 12D.5.1.9: Demonstrate forming domes with dapping tools and block.
 - SLO 12D.5.1.9: Demonstrate the safe and appropriate use of forming equipment (e.g., mandrels, anvils, metal blocks) as it pertains to advanced gem setting.
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GLO 5.2: Demonstrate the **lost wax casting techniques** used in creating jewellery.

- SLO 12D.5.2.1: Demonstrate an understanding of the lost wax casting process as it pertains to advanced gem setting.
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GLO 5.3: Demonstrate the **construction** of jewellery incorporating components such as **handmade and commercial findings**.

- SLO 12D.5.3.1: Define terminology for findings and jewellery items as it relates to advanced gem setting.
 - SLO 12D.5.3.2: Incorporate findings into construction as they pertain to advanced gem setting.
 - SLO 12D.5.3.3: Demonstrate the construction of a basket setting from wire.
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GLO 5.4: Demonstrate **stone-setting techniques**.

- SLO 12D.5.4.1: Demonstrate constructing settings for pearls and pearl setting.
 - SLO 12D.5.4.2: Demonstrate bead setting.
 - SLO 12D.5.4.3: Demonstrate rub setting.
 - SLO 12D.5.4.4: Demonstrate channel setting.
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GLO 5.5: Demonstrate **production techniques** in the construction of jewellery.

- SLO 12D.5.5.1: Demonstrate the organization of work for the finishing process.
 - SLO 12D.5.5.2: Define the production and benefits to the jewellery trade.
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Goal 6: Demonstrate an understanding of the **finishing, polishing, and textural techniques** of jewellery creation.

GLO 6.1: Demonstrate the **finishing techniques** of jewellery creation.

- SLO 12D.6.1.1: Identify the sequence of the finishing steps leading up to polishing as it pertains to advanced gem setting.
 - SLO 12D.6.1.2: Identify the tools and equipment used in finishing jewellery as they pertain to advanced gem setting.
 - SLO 12D.6.1.3: Demonstrate the sequence of finishing steps as they pertain to metal type, technique, and jewellery design as it relates to advanced gem setting.
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GLO 6.2: Demonstrate the **polishing techniques** of jewellery creation.

- SLO 12D.6.2.1: Identify the sequence of polishing techniques as it pertains to advanced gem setting.
 - SLO 12D.6.2.2: Select the sequence of polishing techniques during jewellery construction based on metal type, technique, and jewellery design as it relates to advanced gem setting.
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GLO 6.3: Demonstrate the **textural finishing techniques** of jewellery creation.

- SLO 12A.6.3.1: Demonstrate techniques for texturing as they relate to advanced gem setting.
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Goal 7: Demonstrate knowledge of the **adjustment, modification, and repair** of jewellery.

GLO 7.1: Demonstrate an awareness of situations which require jewellery to be **adjusted, modified, or repaired**.

SLO 12D.7.1.1: Identify situations in which jewellery would require adjustments, modifications, or repairs using advanced gem-setting techniques.

GLO 7.2: Adjust jewellery.

SLO 12D.7.2.1: Adjust jewellery using advanced gem-setting techniques.

GLO 7.3: Modify jewellery.

SLO 12D.7.3.1: Modify jewellery using advanced gem-setting techniques.

GLO 7.4: Repair jewellery.

SLO 12D.7.4.1: Repair jewellery using advanced gem-setting techniques.

Goal 8: Demonstrate an understanding of the transferable, **cross-curricular** knowledge and skills as they pertain to the jewellery trade.

GLO 8.1: Read, interpret, and communicate.

SLO 12D.8.1.1: Read and identify project specifications as they pertain to advanced gem setting

SLO 12D.8.1.2: Read and identify technical information as it pertains to advanced gem setting.

GLO 8.2: Apply **mathematics** knowledge and skills relevant to jewellery/metalsmithing.

SLO 12D.8.2.1: Define units of measurement and tools relating to the jewellery trade (e.g., metric and imperial measurements, weights and volumes, gauges) as they pertain to advanced gem setting.

SLO 12D.8.2.2: Demonstrate the use of basic geometry as it pertains to advanced gem setting.

GLO 8.3: Apply **science** knowledge and skills relevant to jewellery/metalsmithing.

No applicable SLOs.

GLO 8.4: Apply **art** knowledge and skills relevant to jewellery/metalsmithing.

SLO 12D.8.4.1: Demonstrate the creation of a design for project use related to advanced gem setting.

SLO 12D.8.4.2: Discuss and apply design elements as related to advanced gem setting.

GLO 8.5: Apply **other subject areas** knowledge and skills relevant to jewellery/metalsmithing (art, physical education/health education, information communication and technology, social studies).

SLO 12D.8.5.1: Demonstrate the use of Internet for design development and technical information as it pertains to advanced gem setting.

Goal 9: Demonstrate an understanding of **career opportunities** in the jewellery trade and associated professions.

GLO 9.1: Describe education and **career opportunities, and professional organizations** in the jewellery trade and associated professions.

No applicable SLOs.

Goal 10: Demonstrate awareness of **sustainability** as it pertains to the jewellery trade.

GLO 10.1: Describe the impact of **sustainability** on the health and well-being of metalsmiths and their clients.

SLO 12D.10.1.1: Identify ergonomics and repetitive movement strains as they pertain to advanced gem setting.

SLO 12D.10.1.2: Discuss sustainability as it relates to the human health and well-being of jewellers/metalsmiths and their clients as it pertains to advanced gem setting.

SLO 12D.10.1.3: Discuss the impact on health of metal and material allergies, dust, and toxicities as they pertain to advanced gem setting.

SLO 12A.10.1.4: Demonstrate the proper use of equipment and tools to prevent repetitive strain injuries—ergonomics as it pertains to advanced gem setting.

GLO 10.2: Describe the trade's **sustainability practices** and impact on the environment.

SLO 12D.10.2.1: Demonstrate the appropriate disposal and/or recycling of materials and supplies as it pertains to advanced gem setting.

SLO 12D.10.2.2: Describe and apply the efficient use and disposal of materials as it pertains to advanced gem setting.

SLO 12D.10.2.3: Discuss chemical hazards on the environment as introduced as they pertain to advanced gem setting.

SLO 12D.10.2.4: Demonstrate a basic knowledge of efficient material usage to reduce waste and its impact on the environment.

GLO 10.3: Describe **sustainable business practices** within the jewellery trade.

No applicable SLOs.

Goal 11: Demonstrate **awareness of the ethical and legal standards** as they pertain to the jewellery trade.

GLO 11.1: Practise the **ethical and legal standards** as they pertain to the jewellery trade.

No applicable SLOs.

Goal 12: Demonstrate knowledge of the **employability skills** related to the jewellery trade.

GLO 12.1: Demonstrate the **fundamental employability skills**.

SLO 12D.12.1.1: Demonstrate problem-solving skills.

SLO 12D.12.1.2: Demonstrate critical-thinking skills.

SLO 12D.12.1.3: Demonstrate regular attendance and punctuality.

SLO 12D.12.1.4: Demonstrate accountability by taking responsibility for one's actions.

SLO 12D.12.1.5: Demonstrate adaptability, initiative, and effort.

SLO 12D.12.1.6: Demonstrate the ability to accept and follow direction and feedback.

SLO 12D.12.1.7: Demonstrate teamwork skills.

SLO 12D.12.1.8: Demonstrate the ability to stay on task and use class and studio time effectively.

SLO 12D.12.1.9: Demonstrate the ability to communicate respectfully and effectively with co-workers and customers.

SLO 12D.12.1.10: Demonstrate the ability to maintain an organized work area and use equipment, tools, and materials respectfully.

SLO 12D.12.1.11: Demonstrate appropriate dress for safe work with equipment and tools.

GLO 12.2: Demonstrate an understanding of the **business operation** of a jewellery/metalsmithing trade.

SLO 12D.12.2.1: Demonstrate the calculations of metal costs for projects.

Goal 13: Understand the **evolution and technological progression of, and the emerging trends in** the jewellery/metalsmithing trade.

GLO 13.1: Describe the **evolution and technological progression of, and the emerging trends in** the jewellery trade.

SLO 12D.13.1.1: Discuss the evolution and technological progression of, and the emerging trends in the jewellery trade as they pertain to advanced gem setting.

SLO 12D.13.1.2: Demonstrate the use of new technology as it pertains to advanced gem setting.
