

Sabbatical Report
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My Fall 2021 sabbatical objective was to complete coursework and seminars towards the American Welding Society Certified Welding Instructor credentials. I have a Master of Fine Arts degree with metalsmithing specialization. The primary focus of that degree is artistic expression in the medium of metal. The American Welding Society courses add to my knowledge and specifically focus on industrial process relevant to workforce requirements.

While on Sabbatical, I became a member of the American Welding Society. This membership provides access to professional support, education and training opportunities, and AWS publications. These are valuable resources that can aid in the advising of students interested in the field of welding. Additionally, I took a series of American Welding Society courses designed to solidify understanding of welding fundamentals, safety practices, and industry procedures. The courses I completed were:

Welding Fundamentals I - Twenty-nine modules covering the basic science and practical application of the most commonly utilized welding processes along with other essential topics, including welding terminology, weld design, welding safety, electrical theory, the weldability of metals, and welding quality control

Welding Fundamentals II – Twenty-one modules providing a comprehensive overview of resistance welding, plasma arc welding, electron beam welding, and laser beam welding, cutting, and drilling. The course covers the science, equipment, consumables, process variables, safety precautions, and advantages and disadvantages inherent to each process

Welding Fundamentals III – Fifteen modules covering the basic science and practical application of the most commonly utilized brazing and soldering processes. These processes include torch, furnace, dip, and induction brazing, as well as iron, torch, furnace, dip, and wave soldering

Safety in Welding – Eleven modules based on the ANSI Z49.1:2012 Safety in Welding Standard, the course topics include hazards, safety equipment, ventilation, welding in confined spaces, safety precautions, and safety specifications.

Understanding Welding Symbols – Thirty-five modules covering identification of basic components of a welding print, differentiation of different joint and weld types, and the reading and layout of welding, brazing, and nondestructive examination symbols.

WPS/PQR Explained – five modules covering welding procedure specifications (WPS) and its supporting procedure qualification record (PQR). The course provides a comprehensive overview of these documents.

Topics include: the format and function of a WPS and a PQR; the different types of WPSs; essential and nonessential variables for arc welding, oxyfuel welding, resistance welding and brazing procedure specifications; the procedure qualification process; the information included on a PQR; and common nondestructive and destructive tests.

Fabrication Math II – Fifteen modules covering the concepts, equations, and formulas that welders, welding foremen, welding supervisors and other welding professionals require to estimate, plan, and produce quality welds.

Metallurgy II – Eleven modules covering the nature of metals, the metallurgical phenomena involved in welding, and the effects of these phenomena on the properties of welded materials.

Science of Nondestructive Testing – Thirteen modules covering welding discontinuities and the science and application of visual testing (VT), penetrant testing (PT), magnetic particle testing (MT), radiographic testing (RT), and ultrasonic testing (UT). Topics include discontinuities and their causes, as well as the role of vision, capillary action, magnetism, radiation, and sound in VT, PT, MT, RT and UT respectively.

Destructive Testing – Seventeen modules covering destructive testing methods used for applications such as welding procedure qualification, welder performance qualification testing, and material verification. The course describes the material properties of metals that can be evaluated with destructive testing, as well as the principles and performance of the most common destructive tests used in the welding industry.

These courses covered a vast amount of information and proved to be very educational of me. Though I certainly had a solid foundation of knowledge about basic welding, there were numerous areas that were new to me. The areas that were rich with new material for me were areas that concern the specific industry standards and procedures related to structural code compliant welding, inspection and testing. Additionally, the course covering the reading of welding blueprints was quite informative. The information gleaned from these courses has already proved useful in the advising of students interested in the field of welding.

After completion of these courses I participated in a two-week, intensive seminar that included thorough coverage of the D1.1 Code Book (structural welding standards) and practical application of the code. The seminar presented real world tests of code knowledge, welding documents such as blueprints, WPS and PQR that had to be evaluated, sample welds that had to be inspected for code compliance and exams that tested code knowledge.

My sabbatical was informative, and provided me with a much greater understanding of the welding industry than my previous artistic training. I have already used some

of this knowledge to inform students and direct them to the proper resources regarding welding as a possible profession. I am confident that I will continue utilize the valuable skills that I gained during my leave.