INSTITUTO TECNOLOGICO de SALTILLO
Department of Metal-Mechanics
Saltillo, Coahuila, Mexico
its.mx

The Program

The Instituto Tecnologico de Saltillo is part of the National Technological of Mexico. It's main function is to support industry, business and community – providing professionals with the levels of Engineering, Bachelor and Postgraduate. The school began in 1951 with 322 students; today there are over 7000 students.

The mission of the school is to provide high quality technological education, integrating competent professionals with a high sense of social responsibility, solid training in science, technology and innovation, contributing to the sustainable development of the country.

Because students can get started in foundry processes as early as Freshman year, they are exposed to a multitude of activities, processes, and applications. There are two minors that students are able to choose from – Foundry Processes and Advanced Materials which helps them to focus their efforts in an area that really interests them. Due to their level of experience and expertise, most students are able to find a position quickly following graduation as there are many foundries in the Saltillo and Monterrey areas.

Saltillo students excel at problem solving based on the knowledge they gather from their classes. They learn enough background to apply what they've learned and practice "hands-on" so that they can apply lab work into real world situations.

Students earn a BS in Materials Science.

The Curriculum

The metalcasting program at Saltillo is very focused. The following classes are all required and all include lab work: Iron Foundry; Non-Ferrous Foundry; Sand Technologies; Simulation of Foundry Processes (Solid Work & MAGMA); Statistics for Foundry Processes; and Molding & Casting Systems.

The curriculum at Saltillo also includes work experience. Each student participates in a co-op experience as part of their "class" – this gives them the opportunity to learn in class and then put into practice right away.

The Facilities

The lab at Instituto Tecnological de Saltillo is filled with many pieces of equipment that make it possible for students to receive a wide variety of experiences – leading to proficiency in multiple processes. Induction furnaces, furnaces for aluminum castings, Instron machine and wear equipment, and hardness and microhardness equipment are all part of the lab experience. Students can also take advantage of a green and no-bake sand lab, a metallography lab, and a characterization lab. These facilities allow students to learn about physical and chemical properties, optical microscopy and scanning electron microscopy; they can also run corrosion tests.

The Professor

Efrain Almanza received his BS in Metallurgical Engineering and his MS in Metallurgy from Instituto Tecnologico de Saltillo. He then attended the University of Texas El Paso and received his PhD in Materials Science. Prior to accepting a position as Researcher-Professor at Tec Saltillo, Efrain spent several years in industry positions. He worked in the chemical analysis laboratory in an aluminum foundry in Nuevo Laredo, Tamaulipas, and he was a process engineer at de Acero, Saltillo. He also taught courses to industry personnel in failure analysis and corrosion in ferrous and non-ferrous alloys as well as developing research projects at Tupy in Saltillo.

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The Students

Processes and experiences that are available to the students are:

- Molding: Green Sand and Chemically Bonded
- Metals: Aluminum, Iron, Steel, and Copper Base
- Core Making and Casting Simulation
- Processes: Machining, Heat Treating, Metallography, Mechanical Testing, NDT, and Metrology

Students from Tec Saltillo participate in many extra-curricular activities. Not only do the students meet monthly for their AFS student chapter meeting, but they participate in casting competitions and tour foundries two or three times per semester. They also host open foundry days which allow high school students to come through and actively participate in the metalcasting process. The students organize an annual foundry seminar inviting high students and students from other foundry-focused colleges to come and learn from industry speakers.

Over the past four years, 26 FEF registered students have taken a job in metalcasting or related industry and 16 students have participated in internships and/or co-ops in metalcasting or related industry in the past two years.