

Louisiana Technical College Paves the Road for Inspection Careers

A well-rounded education is offered at the school's Nondestructive Testing program with courses in drafting, technical report writing, manufacturing processes, radiation safety, and job-seeking skills

BY KRISTIN CAMPBELL

There's nearly a 100% placement rate for students who complete Louisiana Technical College's (LTC) Nondestructive Testing (NDT) Technology program. This impressive fact provides an answer as to why numerous women and men have chosen to pursue careers in the inspection field. Interesting jobs in various industries are available and high-paying opportunities exist. Demand is so great to get into the college's NDT study path that a waiting list is in place for acceptance.

The program has been in operation at LTC since 1966. It is housed at the T. H. Harris Campus, Opelousas, La., and guided by instructors Reginald Lemoine and Steven Hicks. Lemoine graduated from the program where he now teaches and has worked for the college since 1999; Hicks joined the staff in 2002.

"This is the only NDT program offered by a Louisiana Technical College where a student can earn a diploma in Nondestructive Testing," said Lemoine.

NDT Program Highlights

Louisiana Technical College's four-semester NDT program takes approximately 15 months to complete. Classes are scheduled from Monday through Friday and generally run from 8:00 a.m. to 2:00 p.m. "We want students to be ready for a starting position. That's what it's all about," Lemoine said.

At the present time, 40 to 50 students are enrolled. Typically, 25 students get accepted every other semester for this program, and a majority of them range from 18 to 25 years old. Upon finishing the program, they earn a diploma in NDT. What's more, all semester training hours can be applied to an employer toward certification.

Curriculum Details

Instruction begins with learning basic math, physics, and drafting skills — Fig. 1. In the first half of the program, students take lecture and lab classes focusing on liquid penetrant and magnetic particle inspections. Afterward, they move ahead to take classes specializing in radiography, ultrasonics, and manufacturing processes — Figs. 2, 3. All NDT students are expected to pass general, practical, and specific exams at the end of each class in each discipline.

The second half of instruction is about 25% lecture and 75% hands-on teaching. In the student's final semester, they can obtain a Louisiana Radiation Safety License Certification by passing the state's exam.

"We try to give them a little bit of everything," Lemoine said about the curriculum. Local employers are invited to an event every year where the program is reviewed, and if they think a



Fig. 1 — Drafting work takes place in one of the college's many featured spaces for its NDT program.

particular subject should be taught, it gets considered.

Courses Offered

Here's a rundown on the more significant courses offered:

- **Nondestructive Testing I** covers the fundamental principles of locating surface defects. Objectives include demonstrating knowledge of a dye penetrant's ability, the properties of penetrants, principles of penetrant testing, and penetrant testing equipment. Inspections are performed using dry and wet methods and a black light.

- **Nondestructive Testing II** gives more advanced techniques used for the location of surface defects. Students perform magnetic particle inspections (MPI) using the dry and wet methods with prods, headshots, coils, and yokes; obtain knowledge of MPI's basic principles to the level of a Level II technician; calculate half-value layers, wall thickness, distances, and number of exposures in radiography along with ultrasonic screen readings, distance, and depth of discontinuities; and identify pipe sizes, thicknesses, and direction.

- **Nondestructive Testing III** introduces students to the safety and use of equipment employed in NDT to locate subsurface defects. They will demonstrate proficiency with ultrasonics, wave propagation, and ultrasonic testing equipment properties; radiation monitoring devices, radiation surveys, and film characteristics; perform an inspection using the longitudinal mode of sound; and make a radiograph with an X-ray tube.

- **Nondestructive Testing IV** includes the more advanced applications of finding subsurface defects and also allows students to test articles according to the codes and procedures

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Fig. 2 — A student uses his acquired skills to perform ultrasonic testing on small-diameter pipes.



Fig. 3 — Two students carefully set up an X-ray system for evaluating welds made on a section of pipe.



Fig. 4 — Blaine Prudhomme (left) and Chase Watson, two students presently attending the college's NDT program, work together on ultrasonic equipment.

used by various industries in the NDT field. What's learned here is as follows: the fundamentals of radiation; operating and emergency procedures; working with Ir-192 and longitudinal/transverse waves of sound; and performing and inspecting with transverse ultrasound and Ir-192.

- **Nondestructive Testing Mathematics** provides exercises in basic functions covering positive and negative numbers, plus problems dealing with algebra, ratio and proportion, and right-triangle trigonometry as applied in the NDT field.

- **Nondestructive Testing Physics** imparts fundamental principles and applications of work, motion, magnetism, light, sound, and atomic theory as related to the NDT field.

- **Nondestructive Testing Drafting** enables the application of basic drafting skills needed by an NDT technician such as lettering, measuring, and isometric and pipe system drawings.

- **Nondestructive Testing Technical Report Writing** involves using the proper format, style, sentence structure, punctuation, word choices, and spelling in technical reports; and describing and applying different indications and measurements on them.

- **Manufacturing Processes** reviews the industries needing nondestructive evaluations of material, control of properties, effects of processing, problems in welding and assembly, finishing and protection, and serviceability of engineering materials.

- **Radiation Safety** helps train the student to work safely as a qualified gamma radiographer. Studied are the codes and procedures of radioactive materials; recognition and operation of

equipment used to measure radiation; becoming familiar with calibration dates on equipment; what type of label should be used to ship a radioactive material; and setting up restricted and unrestricted areas when handling a radioactive material.

- **Nondestructive Testing Blueprint Reading and Sketching** permits interpreting basic welding symbol information as applied to NDT; basic elements of blueprints and sketches identification; interpreting elements of a detail drawing; realizing minimum and maximum tolerances; and using dial calipers, outside diameter and inside diameter micrometers, and other gauges affiliated with NDT.

- **Working in the Nondestructive Testing Industry** gives the student a practical application of combined coursework in the NDT field. Tasks and assignments as prescribed by a workplace supervisor take place, related work and theory assignments as prescribed by the campus instructor get performed, and acceptable employee principles and ethics are demonstrated.

- **Job Seeking Skills** is required of all Technical Diploma and Associate Degree students. It should be taken during their last semester of enrollment prior to completing diploma/degree requirements. The course assists students in making decisions concerning job choices and educational growth by compiling their résumés, evaluating job offers, and outlining information essential to finding, applying for, and terminating a job. Putting together a student career presentation portfolio to minimum specifications is a requirement to finishing this course.

- **Practicum** allows students to have a supervised, on-the-job work experience in relation to their education objectives without compensation, while **Cooperative Education** serves the same purpose but compensation is received for working.

Hands-On Learning

Many areas are provided for students to be trained including the computer, drafting, and ultrasonic technology labs; an inside shop area; an outside setup for X-ray tests; and two classrooms. They also practice working with different types of equipment like dye penetrant testing systems, ultrasonic machines, X-ray equipment, inspection cameras, and hardness kits.

After all, it is important for these students to be familiar with up-to-date tools. "We try to duplicate what industry has," Lemoine said. This ensures prepared individuals will enter the workforce. The college sets a budget for buying new equipment, and the Carl D. Perkins Career and Technical Education Grant helps as well.

Affordable Education Prices

A factor adding to the program's appeal stems from LTC's

reasonable tuition rates. “It’s a state-funded school,” Lemoine said. For example, effective fall 2008 for the Greater Acadiana Region 4 locations, where this program resides, the total for Louisiana residents for tuition, registration, and academic excellence and operational fees for 12+ credit hours is about \$400, while the cost for non-Louisiana residents is around \$700.

Successful Employment Outlook

Former students can be found all across the United States. They have acquired jobs in a range of areas including petrochemical refineries, offshore oil and gas platforms, pipeline and aerospace industries, and nuclear power plants. In addition, their achievements include passing the American Society for Nondestructive Testing’s Level III certification, running and owning companies, and becoming several kinds of inspectors.

Current Students Share Their Thoughts

Blaine Prudhomme of Port Barre, La., decided to attend the college and become educated in NDT so he would be able to move up in a job more quickly. His cousins actually work in this field and received on-the-job skills, but without being formally trained, it took a while for them to get ahead.

Prudhomme looks forward to learning about radiation inspection soon. He mentioned that doing radiation calculations last semester was a bit challenging to set up boundaries for exposure limits and how much of this comes through concrete at shot times with testings, but he got through it fine.

“For the first couple of years, I’d like to work on pipelines,” Prudhomme said of his future career. After that, he would like to progress into obtaining a job at a plant.

Another promising student, Chase Watson from Houston,

Tex., took welding classes in high school and at LTC. He decided to pursue NDT not only because he has family in Louisiana, but the welding and inspection fields go hand in hand.

Watson likes learning new things and has enjoyed doing magnetic particle testing because it provides results in a few seconds. He started off rough with the NDT math and physics courses, yet this all became easier after knowing what numbers worked, understanding the proper steps to follow, and studying.

“I’d like to work in a factory or plant,” Watson said regarding his upcoming aspirations. Plus, he would like to move back to his Texas hometown and find work there. “Only a small percentage of people can do this job,” Watson added, which he believes makes it pretty remarkable.

Both these students especially enjoy the hands-on training provided — Fig. 4. They started the program this past January and are expected to finish by April 2010. Prudhomme and Watson believe what they have learned will serve them well once they enter the workplace.

Looking Ahead

Right now Lemoine is not sure if the college’s NDT program will expand anytime soon. The necessary funds would need to become available for a project like that to begin.

In the meantime, Lemoine looks forward to continue teaching and sharing his knowledge. He enjoys seeing the progression that occurs while students are in this program and after they leave it to pursue their own careers in the inspection field. “We see a lot of these guys excel,” Lemoine said. To have helped play a role in this movement is really gratifying, he added.

For more information about LTC, check out its Web site at www.ltc.edu. ❖