



# DIAL VIRTUAL SCHOOL INTRODUCTION TO MEDICAL DIAGNOSTICS

## **Instructor**

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## **Course Syllabus for Introduction to Medical Diagnostics (14102)**

### **Course Description:**

Diagnostic services create a picture of the health status of a patient at a single point in time. Introduction to Medical Diagnostics will address tests and evaluations that aid in the detection, diagnosis, and treatment of disease, injury, or other physical conditions.

### **Program of Study Application:**

Introduction to Medical Diagnostics is the first pathway course in the Health Science career cluster, Diagnostics pathway. The course would follow participation in one or more cluster courses. Completion of Introduction to Health Informatics would prepare a student to participate in Medical Intervention or a capstone experience.

### **Rationale Statement:**

This course is designed to gain student interest in medical diagnostics.

Medical diagnostic technicians collect samples and perform tests to analyze body fluids, tissue, and other substances.

This course is designed to encourage high school students to become active participants in designing their future in health care.

According to [www.bls.gov/ooh](http://www.bls.gov/ooh):

Employment of medical laboratory technologists is expected to grow by 11 percent between 2020 and 2030, about as fast as the average for all occupations.

Employment of medical laboratory technicians is expected to grow by 15 percent between 2020 and 2030, about as fast as the average for all occupations.

An increase in the aging population will lead to a great need to diagnose medical conditions, such as cancer or type 2 diabetes, through laboratory procedures.

Medical laboratory technologists typically do the following:

- Analyze body fluids such as blood, urine, and tissue samples to determine normal or abnormal findings.
- Collect and study blood samples for use in transfusions by identifying the number of cells, the cell morphology or the blood group, blood type, and compatibility with other blood types.
- Operate sophisticated laboratory equipment such as microscopes and cell counters.
- Use automated equipment and computerized instruments capable of performing a number of tests at the same time.
- Log data from medical tests and enter results into a patient's medical record.
- Discuss results and findings of laboratory tests and procedures with physicians.
- Supervise or train medical laboratory technicians.

Students enrolled in the Introduction to Medical Diagnostics course will foster critical thinking beyond just the basic procedures, creating a thorough awareness of the clinical laboratory responsibilities that students will have to themselves, to their patients, and to the facilities where they work. Coverage includes the organization of health care facilities, the laws and regulations that govern them, and common tasks and responsibilities for the numerous professional categories that comprise the health care industry. Safety for the laboratory employee, the patients, and the visitors is explained in detail.

The course will use an integrated approach that will allow students to master medical terminology while gaining knowledge and understanding of the anatomy and physiology of the human body and disease processes. Credits for successful completion of this program may be articulated to South Dakota Technical Institutes as stated in the South Dakota Articulation Agreement State Guidelines.

**Suggested grade level:** 10-12

**Topics covered:**

- History and Development of Medical Laboratory Science
- Laboratory Personnel Credentialing and Facility Accreditation
- Medical Law, Ethics, and Moral Issues of Health Care
- Hospital and Laboratory Organization
- Introduction to Infection Control
- Medical Economics and Laboratory Equipment
- Pipetting and Use of Glassware
- Laboratory Mathematics
- Quality Assurance

- Phlebotomy
- Procedures for Urinalysis and Body Fluids
- Hematology and Coagulation
- Clinical Chemistry
- Microbiology
- Immunology and Serology
- Immunohematology (Blood Banking)

## **Diagnostic Services Pathway Course Standards**

These standards apply to occupations or functions primarily involved in creating a picture of the health status of patients and other clients at a single point in time. The standards specify the knowledge and skills needed by professionals in the diagnostic services pathway.

### **IMD 1: Investigate Diagnostic Pathway careers.**

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IMD 1.1 Compare and contrast scope of practice of diagnostic careers.
One Recall	IMD 1.2 Identify educational requirements for specific careers.
One Recall	IMD 1.3 Identify workforce needs and compensation.
One Recall	IMD 1.4 Identify licensure, registration, or certification requirements.

### **IMD 2: Recognize skills necessary to work in any healthcare facility.**

<i>Webb Level</i>	<i>Sub-indicator</i>
Two Skill/Concept	IMD 2.1 Summarize the Health Insurance Portability and Accountability Act (HIPAA) and how it provides confidentiality for healthcare information.
Two Skill/Concept	IMD 2.2 Demonstrate infection control standard precautions.
Two Skill/Concept	IMD 2.3 Apply and demonstrate professional appearance.

### **IMD 3: Understand the dynamics of a healthcare diagnostic workplace.**

<i>Webb Level</i>	<i>Sub-indicator</i>
One Recall	IMD 3.1 Identify workplace equipment, protocol, and procedures.
Two Skill/Concept	IMD 3.2 Demonstrate professional communication and teamwork.
Four Extended Thinking	IMD 3.3 Apply professional level patient care and interaction scenarios.

## **Instructional Philosophy and Instructional Delivery Plan**

### ***Expectations for student performance:***

Students are expected to meet all of the course goals and be able to demonstrate their understanding of the underlying concepts.

### ***How the instruction will be delivered:***

The class will be presented using online-learning and instruction with accompanying interactive video supported with **Blackboard Learn**. The instruction will include the on-line textbook.

### ***Expectations of Communications:***

The instructor will respond to student communication within a 24 – 48 hour time limit.

### ***How students will work:***

Students will be assigned textbook and online assignments that will include practice exercises, projects and chapter reviews. The activities will require students to work independently.

### ***How the community will be utilized:***

Community healthcare professionals will be accessed as appropriate as guest speakers or fieldtrip facilitators, if indicated.

### ***How student learning will be assessed:***

Tests, quizzes and projects will be assigned for each unit.

### **How late assignments will be graded:**

All work assignments, activities, labs, etc. will be due on Fridays at 12:00 pm midnight.

Any work turned in post due date, assignments will be given an automatic 80% points. After one week of late work, the grade automatically goes to 70% and then if not turned in by the second week following due date, a 0 will be given.

### **Plagiarism / Fabrication / Cheating, etc. listed in the DIAL Virtual School Student Policy:**

- **First offense:** Student will be given a verbal warning and a chance to redo the assignment. The district e-mentor / facilitator will be notified.
- **Second offense:** Grade weights will be changed, tests are proctored, and will receive a zero on the assignment. The district e-mentor / facilitator will be notified.

**The grading scale for this course will be defined by a percentage using total point for the semester.**

**Each participating school may assign their letter grade to the percentage according to their local District grading system.**

## **Course Goals**

Students will learn to:

1. Explain the rationale for each procedure related to clinical laboratory science.
2. Describe the principles for determining a disease state and the diagnostic tests for determining the patient's condition.
3. Develop the psychomotor skills for performing basic laboratory tests.
4. Analyze actions and level of base knowledge required to be an effective professional in the laboratory science field.
5. Demonstrate confidence, manual dexterity, and forethought in the practice of clinical laboratory science.

### **Major Course Projects**

Students will be expected to:

1. Complete assigned practice exercises.
2. Create PowerPoint slideshows and videos throughout various chapters.
3. Interpret medical case studies and scenarios that include medical terms and abbreviations.
4. Research health diseases and disorders as they relate to the body system.