

# Division of Allied Health Sciences

Robert R. Roales, Chairperson

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## Advising

For academic advising on any of the allied health or related programs, see Robert R. Roales, chairperson of Allied Health Sciences. Further information is available in the division office, Hunt Hall, Room 212.

## IU Kokomo Programs

### Coding Technology Certificate

Students may complete this program entirely at Kokomo

New regulations that govern the payment of health service claims issued by various government entities, and also by third-party agencies, have created a sharp growth in the demand for qualified coders. Although most coding positions, at present, do not require associate or bachelor's degrees in health information, this growth career field does require specialized training in areas that are related to insurance and health care in general. The Coding Technology Certificate program has been developed to meet the need for quality training for individuals interested in pursuing this field, and combines an understanding of medical terminology and the disease process with ICD-9-CM and CPT coding principles and guidelines.

### Certificate Requirements

Students must successfully complete ANAT-A 215 Basic Human Anatomy, PHSL-P 215 Basic Human Physiology, CLAS-C 209 Greek and Latin Elements in Medical Terminology, MICR-J 200 Microbiology and Immunology, AHLT-M 190 Medical Coding I, AHLT-M 191 Medical Coding II and AHLT-M 192 Introduction to HIM & reimbursement methodologies with a minimum grade of C in each course.

### Coding Technology Courses—Kokomo

Note: The university reserves the right to cancel courses for insufficient enrollment.

P = prerequisite R = recommended

C = corequisite \* = lab fee

AHLT-M 190 Coding I (3 cr.) The study of ICD-9-CM coding and classification principles and CPT coding principles, as used in acute ambulatory and long-term care facilities.

AHLT-M 191 Coding II (3 cr.) Advanced principles of the ICD-9-CM classification system; optimization; DRG's, sequencing, reimbursement; application of CPT coding principles in acute and ambulatory settings.

AHLT-M 192 Introduction to HIM and Reimbursement Methodologies (3 cr.) Introduction to health information management, health records, standards, regulations and content; overview of release of information principles, privacy and security; reimbursement methodologies including Medicare, third party payers, ambulatory settings and physician practices.

### Medical Imaging Technology

Students may complete this program entirely at Kokomo.

The medical imaging technologist in radiologic sciences is a skilled radiographer qualified to provide patient service in vascular and intervention procedures, computed tomography, ultrasonography, and magnetic resonance imaging. These areas represent the most advanced imaging in diagnostic radiology. Effective medical imaging technologists utilize principles of radiation protection as they determine exposure factors and position patients for a variety of examinations. They are also capable of assisting in surgical procedures performed during the examination, assessing the technical quality of the image, and providing basic patient care. The technologist must function as a member of the health care team.

Graduates receive a Bachelor of Science degree and are eligible to take specialty examinations, depending on their major area of concentration.

### Radiography

Students may complete this program entirely at Kokomo.

Radiography is a science involving the medical use of X-rays in the diagnosis of disease. A radiologist is a physician specializing in this science, and a radiographer is the technical assistant to the radiologist. Radiographers make up the largest group of imaging professionals. Their principal duties consist of performing X-ray examinations of patients. They also assist in fluoroscopic examinations and in special radiographic procedures. Tasks performed by radiographers vary.

Radiographers must be able to handle seriously ill and injured patients to obtain the maximum amount of information without injury to the patient and with the least amount of pain and discomfort from the examination. They may assist the radiologist, a specially trained physician, in some complex procedures, often involving the injection of opaque media through needles or catheters. Radiographers must be well trained and experienced in aseptic techniques, requiring skills often comparable to those of nurses in some specialties. Most radiographers are employed in hospitals, clinics, and physicians' offices. Graduates receive an Associate of Science degree and are eligible to take the certification examination of The American Registry of

Radiologic Technologists (ARRT) to become certified as a Registered Radiographer R.T. (R).

Please consult the Kokomo Allied Health Division Office for additional admission requirements and prerequisite courses.

### Radiologic Science Courses–Kokomo

Note: The university reserves the right to cancel courses for insufficient enrollment.

P = prerequisite      R = recommended

C = corequisite      \* = lab fee

AHLT-R 100 Orientation to Radiologic Technology (2 cr.) C or P: AHLT-R 101, R 102, and R 181. Introduction to the field of radiology and its history. Students learned proper ethical standards, become acquainted with the duties and responsibilities in personal care for the patient, and investigate radiation protection for the patient and personnel.

AHLT-R 101 Radiologic Procedures 1 (4 cr.) C or P: AHLT-R 100, R 102, and R 181. Concepts in radiography with emphasis on the radiographic procedures used to demonstrate the skeletal system.\*

AHLT-R 102 Principles of Radiography I (3 cr.) C or P: AHLT-R 101, R 181. Basic concepts of radiation, its production, and its interactions with matter. Includes the production of the radiographic image and film processing.

AHLT-R 181 Clinical Experience in Radiography I (4 cr.) C or P: AHLT-R 100. Clinical application of radiographic positioning, exposure techniques, and departmental procedures in all phases of radiologic technology, under the direct supervision of a registered technologist until mastery of clinical objectives is reached.\*

AHLT-R 182 Clinical Experience in Radiography II (4 cr.) P: AHLT-R 101 and R 181. Clinical application of radiographic positioning, exposure techniques, and departmental procedures in all phases of radiologic technology, under the direct supervision of a registered technologist until mastery of clinical objectives is reached.\*

AHLT-R 200 Pathology (2 cr.)P: ANAT-A 215 and PHSL-P 215. A survey of the changes that occur in the diseased state to include general concepts of disease, causes of disease, clinical symptoms and treatment, and diseases that affect specific body systems.

AHLT-R 201 Radiographic Procedures II (4 cr.) C or P: AHLT-R 101, and R 182. Concepts in radiography with emphasis on radiographic procedures used to demonstrate the skull and those requiring the use of contrast media.\*

AHLT-R 202 Principles of Radiography II (3 cr.) C or P: AHLT-R 102, R 201, and R 181. Continuation of R102 with emphasis on the properties that affect the quality of the radiographic image.

AHLT-R 205 Radiographic Procedures III (4 cr.)C or P: AHLT-R 201 and R 222. Concepts in radiography with

emphasis on special radiographic procedures and related imaging modalities.\*

AHLT-R 207 Current Topics in Radiography (2 cr.) Individual and group study focusing on the state of the art in radiography.

AHLT-R 208 Topics in Radiography (2 cr.) Selected topics in radiography. May be repeated for credit if topics differ. Prerequisites may exist for some topics.

AHLT-R 222 Principles of Radiography III (3 cr.) P: AHLT-R 202. Continuation of R202 with emphasis on the application of radiography principles on imaging equipment.

AHLT-R 250 Physics Applied to Radiology (3 cr.) P: MATH-M 117. Fundamentals of radiation physics, X-ray generation, and equipment quality control.

AHLT-R 260 Radiation Biology and Protection in Diagnostic Radiology (3 cr.) P: AHLT-R 250. Study of the biological effects of ionizing radiation and the standards and methods of protection. Emphasis is placed on X-ray interactions. Also included are discussions on radiation exposure standards and radiation monitoring.

AHLT-R 281 Clinical Experience in Radiography III (5 cr.) P: AHLT-R 201 and R 182. Clinical application of radiographic positioning, exposure techniques, and departmental procedures in all phases of radiologic technology, under the direct supervision of a registered technologist until mastery of clinical objectives is reached.\*

AHLT-R 282 Clinical Experience in Radiography IV (5 cr.) P: AHLT-R 201 and R 182. Clinical application of radiographic positioning, exposure techniques, and departmental procedures in all phases of radiologic technology, under the direct supervision of a registered technologist until mastery of clinical objectives is reached.\*

AHLT-R 283 Clinical Experience in Radiography V (5 cr.) P: AHLT-R 201 and R 182. Clinical application of radiography positioning, exposure techniques, and departmental procedures in all phases of radiologic technology, under the direct supervision of a registered technologist until mastery of clinical objectives is reached.\*

AHLT-R 290 Comprehensive Experience (5 cr.) P: AHLT-R 281, R 282, and R 283. Clinical application of radiographic positioning, exposure techniques, and departmental procedures in all phases of radiologic technology under the direct supervision of a registered technologist. Successful completion involves mastery of all clinical aspects of the program.\*

AHLT-R 404 Sectional Imaging Anatomy (3 cr.) An in-depth study of sectional anatomy pertinent to ultrasound, computed tomography, and magnetic resonance imaging. Standard transverse, parasagittal, and coronal planes are included, utilizing images from all three imaging modalities. A discussion of technique, artifacts, and pathology-related alterations of cross-sectional anatomic appearances is included.

AHLT-R 405 Advanced Diagnostic Imaging I (3 cr.) Physics and imaging concepts in cardiovascular interventional technology, computed tomography, diagnostic medical sonography, and magnetic resonance imaging.

AHLT-R 406 Advanced Diagnostic Imaging II (3 cr.) Procedural concepts in cardiovascular interventional technology, computed tomography, diagnostic medical sonography, and magnetic resonance imaging. Image analysis of normal and abnormal studies will be presented.

AHLT-R 408 Topics in Radiologic Sciences (3 cr.) Study of selected topics in radiologic sciences. May be repeated once for credit if topics differ.

AHLT-R 409 Senior Project in Medical Imaging Technology (3 cr.) Independent readings and research on a selected medical imaging topic. A paper in publishable form must be written as part of the project.

AHLT-R 481 Clinical Practicum: Vascular Imaging (6 cr.) Clinical experience in the performance of vascular and neurological imaging studies.\*

AHLT-R 482 Clinical Practicum: Computed Tomography (6 cr.) Clinical experience in the performance of computed tomographic imaging studies.\*

AHLT-R 483 Clinical Practicum: Magnetic Resonance Imaging (6 cr.) Clinical experience in the performance of magnetic resonance imaging studies.\*

AHLT-R 484 Clinical Practicum: Ultrasound Imaging (6 cr.) Clinical experience in the performance of ultrasound imaging studies.\*

AHLT-R 485 Clinical Practicum (6 cr.) Clinical experience in Mammography.\*

## Other Indiana University Programs

IUPUI Allied Health Programs (students may complete all prerequisite courses at IU Kokomo).

## Clinical Laboratory Science

Students may only complete the first three years of this program at Kokomo.

The clinical laboratory scientist is a member of the laboratory team in diagnosis and research who performs many of the tests on tissue and blood that physicians need to treat diseases properly. The first three years of the clinical laboratory science curriculum are designed to provide a broadly based background in chemistry and the biological sciences, as well as an opportunity to elect courses from the humanities and social and behavioral sciences. The fourth year is spent in the clinical laboratory at the IU Medical Center. Selection of the fourth-year students will be made by the faculty of the clinical laboratory science program at IUPUI. Upon graduation, students are eligible to apply for examination for certification by the Board of Registry of the American Society of Clinical Pathologists. Persons with the B.S. in Clinical Laboratory Science find job opportunities

in hospitals, clinics, research institutes, industry, and physicians' offices.

## Degree Requirements

Students must:

1. Satisfactorily complete 90 credit hours, including general education requirements and program prerequisites.
2. Attain a cumulative grade point average of 2.5 or better and a science grade point average of 2.5 or better on a 4.0 scale.
3. Attain no less than a grade of C in the life and physical science prerequisite courses.
4. Satisfactorily complete the fourth (clinical) year.

Please consult the IUPUI bulletin for additional admission requirements and prerequisite courses.

## Cytotechnology

Students may only complete the first three years of this program at Kokomo.

The cell, the keystone of life and control point for health or disease, is the object of the cytotechnologist's attention. This fascinating field involves the microscopic inspection and evaluation of individual cells or groups of cells to detect cancer or other diseases.

The work of the cytotechnologist, which blends with that of pathologists and other physicians, involves developing and utilizing simple and reliable methods of collecting and evaluating cell samples from every organ of the body. The prime objective is to detect cancer early when treatment so often can result in a cure for that disease.

## Degree Requirements

The cytotechnology program is four years in length. It leads to a Bachelor of Science in Cytotechnology degree conferred by the Indiana University School of Medicine.

Students are admitted to the professional year of the cytotechnology program (at the IU Medical Center) after they have earned 90 credit hours of college course work. The professional year usually is the senior year of college study. However, a student who holds a degree in another field also may be admitted into the cytotechnology program.

Please consult the IUPUI bulletin for additional admission requirements and prerequisite courses.

Questions regarding alternative biology courses should be directed to the cytotechnology program faculty.

## Health Information Administration

Students may only complete the first three years of this program at Kokomo

In every aspect of medical care, precise records are important. They are necessary for the physician to prescribe treatment for continuous patient care. They are vital to medical and hospital staff members in research and

administration, and they become pivotal in medicolegal matters.

The training of specialists to develop, manage, and improve health information systems is the aim of the health information administration program. The field is both an art and a science. It involves data collection and analysis of medical records for research purposes and for improved health care delivery.

### Degree Requirements

The four-year health information administration program leads to the degree of Bachelor of Science in Health Information Administration. It is conferred by the Indiana University School of Informatics.

Under this program, students take courses in medical record science; directed practice experience; medical terminology; medical care; hospital organization and management; and medicine and the law; along with courses in basic sciences, humanities, and business. In addition, students have a month-long clinical affiliation in the senior year. Assignments are usually made to a hospital outside the Indianapolis area.

Please consult the IUPUI bulletin for additional admission requirements and prerequisite courses.

### Medical Imaging Technology

Students may also complete this program at IU Kokomo. See IU Kokomo programs above.

The medical imaging technologist in radiologic sciences is a skilled radiographer qualified to provide patient service in vascular and intervention procedures, computed tomography, ultrasonography, and magnetic resonance imaging. These areas represent the most advanced imaging in diagnostic radiology. Effective medical imaging technologists utilize principles of radiation protection as they determine exposure factors and position patients for a variety of examinations. They are also capable of assisting in surgical procedures performed during the examination, assessing the technical quality of the image, and providing basic patient care. The technologist must function as a member of the health care team.

Graduates receive a Bachelor of Science degree and are eligible to take specialty examinations, depending on their major area of concentration.

Please consult the IUPUI bulletin for additional admission requirements and prerequisite courses.

### Nuclear Medicine Technology

Only the first two years of this program are available at Kokomo.

The graduate nuclear medicine technologist is a skilled person qualified to provide patient diagnostic and therapeutic services using ionizing radiation in the form of gamma rays, X-rays, and beta rays. These radiations emanate from radioactive materials. Nuclear medicine technologists perform patient organ imaging procedures,

radioactive analysis of biological specimens (blood, urine), and some therapeutic applications of radioactive materials. Effective nuclear medicine technologists utilize principles of radiation protection as they prepare and administer radioactive materials for a variety of examinations. They are capable of performing quality control procedures on the instrumentation and on the radioactive materials. Nuclear medicine technologists also assist physicians in surgical procedures and during examinations, give intravenous injections, draw blood, assess the technical quality of the studies, and provide basic patient care. The technologist must function as a member of the health care team.

Graduates receive a Bachelor of Science degree and are eligible to take the certification examination of the American Registry of Radiologic Technologists and the Nuclear Medicine Technology Certification Board to become certified as a nuclear medicine technologist, R.T. (N), or C.N.M.T.

Please consult the IUPUI bulletin for additional admission requirements and prerequisite courses.

### Occupational Therapy

A pre-OT baccalaureate degree program is available at IU Kokomo. See the Bachelor of Biological and Physical Sciences Degree in the Department of Natural, Information and Mathematical Science, School of Arts and Sciences section in this *Bulletin*.

Among the fastest growing of the allied health professions is occupational therapy. Professionals in this field are concerned with an individual's ability to engage in the normal activities of everyday life. Focusing on self-care, work, and play, registered occupational therapists determine the extent to which their patients or clients can function. Inability to function in certain areas may be due to lack of muscle strength, limitations in the range of motion in extremities, or the inability to properly integrate sensation. Other reasons include emotional disorders and social problems. After the assessment of the individual's level of function, the therapist plans a treatment program, taking into account the needs, abilities, and desires of the patient. The treatment techniques may include a variety of therapeutic methods, as well as common activities specifically adapted for the patient.

### Degree Requirements

The occupational therapy program offers a Master of Occupational Therapy professional degree. The degree is conferred by the Indiana University School of Health and Rehabilitation Sciences at IUPUI. The prerequisites are a baccalaureate degree including courses in: Abnormal Psychology / Psychopathology, Human Growth and Development, Medical Terminology, Kinesiology, Statistics, Human Anatomy (with a lab) and Human Physiology (with a lab).

## Paramedic Science

Only the first year of this program is available at Indiana University Kokomo.

Emergency medical technicians (EMTs), formerly called ambulance attendants, care for people at the scene of emergencies and transport them to hospitals or other health care institutions. EMTs (basic, intermediate, and paramedic) determine the nature and extent of victims' medical and trauma-related emergencies and provide limited care. Depending on their level of training and on state regulations, EMTs may provide such care as opening and maintaining airways, controlling bleeding, immobilizing fractures, and administering certain drugs.

The Associate of Science in Paramedic Science degree program is designed to prepare emergency medical technicians-paramedics to deliver emergency patient care in the prehospital setting. The EMT-paramedic primarily provides prehospital emergency care to acutely ill or injured patients by ambulance service and mobile advanced life-support units under medical command authority and, secondarily, provides care in other appropriate settings that are under physician supervision.

### Degree Requirements

The paramedic science program is two years in length. It leads to an Associate of Science in Paramedic Science degree conferred by the Indiana University School of Medicine.

Students are admitted to the professional year of the paramedic science program (at the IU Medical Center) after they have earned 29 credit hours of college course work.

Please consult the IUPUI bulletin for additional admission requirements and prerequisite courses.

## Physical Therapy

A pre-PT baccalaureate degree program is available at IU Kokomo. See the Bachelor of Biological and Physical Sciences Degree in the Department of Natural, Information and Mathematical Science, School of Arts and Sciences section in this *Bulletin*.

Physical therapists work with individuals of all ages and treat patients with conditions such as burns; soft tissue injuries; heart and lung disabilities; and problems with nerves, muscles, and bones. Physical therapists use their skills to assist in patient rehabilitation following many types of surgical procedures.

Physical therapists, as members of the health care team, have roles in addition to direct work with patients. They may organize prenatal classes. They have responsibility for many aspects of preventive medicine such as developing screening programs in schools. Some physical therapists are in administration, others work in research, and some teach courses in physical therapy.

Because physical therapists (PTs) are involved in total maintenance and restoration of health and the prevention

of disease, they must know how to apply physical, biological, social, and medical sciences to individuals.

It is essential for physical therapists to evaluate the physical status of patients. Based on results of the evaluations, the PTs, in consultation with referring physicians, establish treatment programs. Then, the physical therapist guides the application of the treatments and makes alterations as the needs of the patient change.

### Degree Requirements

The physical therapy program encompasses three years of study and leads to a Doctor of Physical Therapy degree awarded by the Indiana University School of Health and Rehabilitation Sciences at IUPUI.

Students are accepted into the physical therapy program after completing a Baccalaureate degree.

Students must include Human Anatomy, Human Physiology, and one year of General Chemistry, one year of Physics, General Psychology, Life Span Development, and a course in Statistics as part of their undergraduate curriculum.

Please consult the IUPUI bulletin for additional admission requirements and prerequisite courses.

## Radiation Therapy

Only the first two years of this program are available at Kokomo.

Radiation therapy involves the use of differing forms of ionizing radiation for the treatment of benign and malignant tumors. Radiation therapists administer the prescribed dose of radiation to specific sites of the patient's body as directed by the physician. They operate various types of equipment, including high-energy linear accelerators and radioactive materials, while practicing the principles of radiation protection. The radiation therapy technologist also monitors the patient's care during the treatment period. The Bachelor of Science degree curriculum is based on a combination of general education courses, professional courses, and clinical practicums.

Please consult the IUPUI bulletin for additional admission requirements and prerequisite courses.

## Radiography

Students may complete the entire program at Kokomo.

Radiography is a science involving the medical use of X-rays in the diagnosis of disease. A radiologist is a physician specializing in this science, and a radiographer is the technical assistant to the radiologist. Radiographers make up the largest group of imaging professionals. Their principal duties consist of performing X-ray examinations of patients. They also assist in fluoroscopic examinations and in special radiographic procedures. Tasks performed by radiographers vary.

Radiographers must be able to handle seriously ill and injured patients to obtain the maximum amount of

information without injury to the patient and with the least amount of pain and discomfort from the examination. They may assist the radiologist, a specially trained physician, in some complex procedures, often involving the injection of opaque media through needles or catheters. Radiographers must be well trained and experienced in aseptic techniques, requiring skills often comparable to those of nurses in some specialties. Most radiographers are employed in hospitals, clinics, and physicians' offices. Graduates receive an Associate of Science degree and are eligible to take the certification examination of The American Registry of Radiologic Technologists (ARRT) to become certified as a Registered Radiographer R.T. (R).

Please consult the Kokomo Allied Health Division Office for additional admission requirements and prerequisite courses.

## **Respiratory Therapy**

Only the first two years of this program are available at Kokomo.

Respiratory therapists help in the diagnosis and treatment of a wide variety of patients with heart and lung problems. Patients may be in newborn nursery units, in surgical and medical units, in emergency rooms, and in outpatient departments and intensive care units of hospitals. Patients may have chronic conditions that threaten their lives, or have birth defects or accident-connected disabilities affecting their heart, lungs, or other body organs.

Sophisticated equipment may be necessary to help people continue breathing. Respiratory therapists assist patients with systems and procedures such as airway management, artificial mechanical ventilation, external cardiac massage, and other heart and lung support measures. Many patients who might not otherwise have survived are now returning to active lives.

Respiratory therapists also perform patient care in carrying out physicians' orders with specific therapeutic measures. They may provide and recommend specialized respiratory care. They are concerned about total patient welfare, realizing that some procedures may affect a patient's overall physiologic status. Respiratory therapists use a variety of testing techniques to assist in medical research and diagnosis of disease in performing their function as a part of the health care team.

## **Degree Requirements**

The respiratory therapy program offers a Bachelor of Science in Respiratory Therapy degree.

In the first two years of college, students take prerequisite courses so that they may enter the professional portion of the degree program in the junior year. Counselors assist the students in choosing the proper beginning courses. Students apply for admission to the respiratory therapy program in the fall semester one year prior to their anticipated entry. The admission process includes a personal interview during the spring semester.

The curriculum provides an understanding of the biological and physical sciences and disease processes, as well as of the technical equipment and procedures necessary to prepare graduates to function as important members of the health care team. Students become acquainted with the field through classes, laboratories, and in-hospital clinical experiences. Six hospitals in Indianapolis provide laboratory and direct patient care experience.

Please consult the IUPUI bulletin for additional admission requirements and prerequisite courses.

## ***Indiana University School of Dentistry***

### **Dental Hygiene**

Only the first year of this program is available at Kokomo.

The dental hygienist is a member of the dental health team who provides educational, preventive, and therapeutic oral health services. Employment opportunities may be available in private dental practice, hospitals, public health, educational institutions, and research. Indiana University offers a program leading to an Associate of Science degree.

Prerequisite Courses—Written Communication (3 cr.), General Psychology (3 cr.), Introductory Sociology (3 cr.), Public Speaking (3 cr.), Chemistry (5 cr.), Arts and Humanities (6 cr.), Basic Human Anatomy (5 cr.), Basic Human Physiology (5 cr.), and Microbiology (4 or 5 cr.).

Information about dental auxiliary education programs may be obtained from the following sources:

#### Indianapolis

Director of Preprofessional Counseling or  
Director, Dental Hygiene  
Indiana University School of Dentistry  
1121 West Michigan Street, Indianapolis, IN 46202

#### Fort Wayne

Supervisor, Dental Hygiene  
Indiana University Purdue University Fort Wayne  
2101 Coliseum Boulevard East, Fort Wayne, IN 46805

#### South Bend

Supervisor, Dental Hygiene  
Indiana University South Bend  
1825 Northside Boulevard, South Bend, IN 46615

#### Gary

Director, Dental Hygiene  
Indiana University Northwest  
3223 Broadway, Gary, IN 46408