

# BIOMEDICAL ENGINEER



## Description

- Biomedical engineers combine engineering principles with medical and biological sciences to design and create equipment, devices, computer systems, and software used in healthcare.

## Education Required

- Bachelors - 4 yrs
- Masters - 6 yrs

## Salary

- \$87,000

## Area College Options

- Murray, University of Kentucky, University of Louisville

## Resources

- Bmes.org Biomedical Engineering Society

# CHAPLAIN



## Description

- Minister, such as a priest, pastor, rabbi, imam or lay representative of a religious tradition, attached to a secular institution such as a hospital, prison, military unit, school, police department, fire department, university, or private chapel.

## Education Required

- Masters - 6 yrs

## Salary

- \$45,000

## Area College Options

- Asbury, University of Louisville

## Resources

- [Professionalchaplains.org](http://Professionalchaplains.org) Association of Professional Chaplains

# HEALTH INFORMATION TECHNOLOGY



## Description

- Practice of acquiring, analyzing, and protecting digital and traditional medical information vital to providing quality patient care. It is a combination of business, science, and information technology.

## Education Required

- Associates – 2 yrs
- Bachelors – 4 yrs
- Masters – 6 yrs

## Salary

- \$49,000

## Area College Options

- Sullivan, WKU, Ashland CTC, Big Sandy CTC, Bluegrass CTC, Southcentral CTC, Elizabethtown CTC, Gateway CTC, Hazard CTC, Hopkinsville CTC, Jefferson CTC, Madisonville CTC, Maysville CTC, Owensboro CTC, Somerset CTC, West KY CTC

## Resources

- Ahima.org American Health Information Management Association

# Certifications



## Health Information Management

RHIA

- **Registered Health Information Administrator (RHIA)**
- Expert in managing patient health information and medical records, administering computer information systems, collecting and analyzing patient data, and using classification systems and medical terminologies

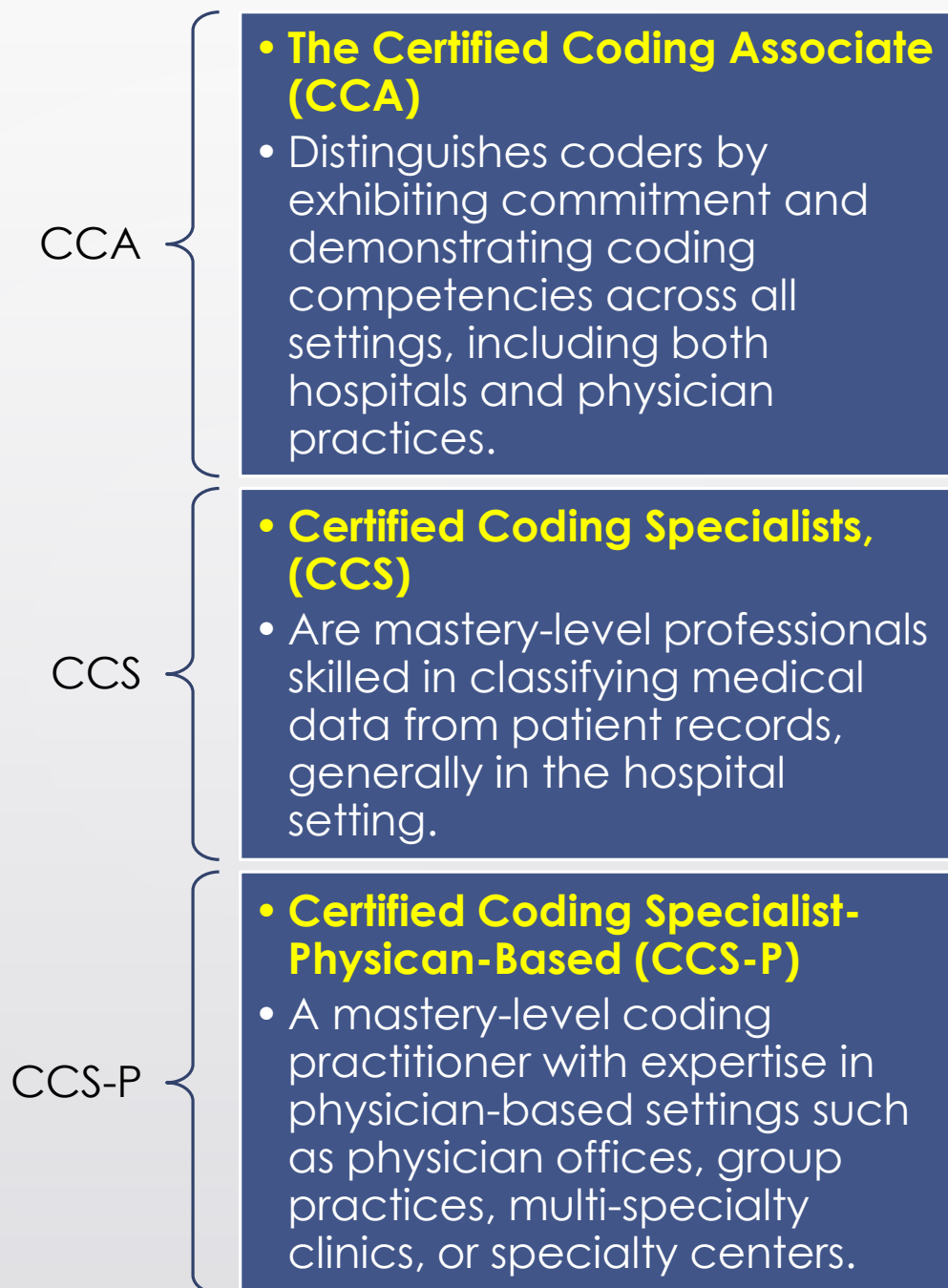
RHIT

- **Registered Health Information Technologist (RHIT)**
- Ensure the quality of medical records by verifying their completeness, accuracy, and proper entry into computer systems. They may also use computer applications to assemble and analyze patient data to improve patient care or control costs. RHITs often specialize in coding diagnoses and procedures in patient records for reimbursement and research.

# Certifications



## Coding/Billing



# Certifications



## Specialty Certificates

CHDA

- **Certified Health Data Analyst, (CHDA)**

- Demonstrate expertise in health data analysis and the knowledge to acquire, manage, analyze, interpret, and transform data into accurate, consistent, and timely information, while balancing the "big picture" strategic vision with day-to-day details.

CHPS

- **Certified Healthcare Privacy and Security (CHPS)**

- Only combined privacy and security certification available in the healthcare industry. CHPS denotes competence in designing, implementing, and administering comprehensive privacy and security protection programs in all types of healthcare organizations.

CDIP

- **Certified Documentation Improvement Practitioner (CDIP)**

- Focused on document improvement to ensure that the correct information is being captured on medical forms and through the electronic medical record to help with data analysis and research projects.

# MEDICAL LABORATORY SCIENTIST



## Description

- Perform routine and complex lab tests to help with diagnosis and treatment decisions

## Education Required

- Bachelors – 4 yrs
- Specialize in certain areas through a clinical period – 6 months

## Salary

- Varies by specialty: \$54,000-\$75,000

## Area College Options

- Bellarmine, Brescia, ECU, Kentucky Wesleyan, Thomas More, UK, WKU

## Resources

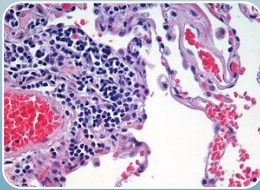
- [ascls.org](http://ascls.org) American Society for Clinical Laboratory Science

# Medical Lab Specialties Information



## Cytotechnologist

- Examine cell samples
- \$65,000



## Histotechnologist

- Examine tissue samples
- \$59,000



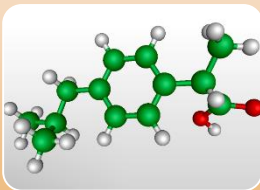
## Blood Bank

- Perform tests in blood donor centers, transfusion services, reference laboratories and research facilities.
- \$59,000



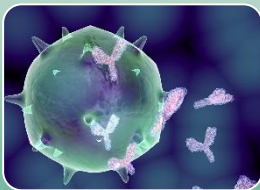
## Chemistry

- Clinical chemistry involves the testing of different chemicals in the body to help determine overall health.
- \$59,000



## Molecular

- Molecular biology is a branch of science concerning biological activity at the molecular level.
- \$75,000



## Immunology

- Clinical immunology technologists run tests on blood, human tissue samples, and other biological substances
- \$54,000



## Microbiology

- Examining bacteria and microorganisms for scientific and medical purposes
- \$60,000

# PHARMACIST



## Description

- Pharmacists dispense prescription medications to patients and offer expertise in the safe use of prescriptions. They also may conduct health and wellness screenings, provide immunizations, oversee the medications given to patients, and provide advice on healthy lifestyles.

## Education Required

- Doctorate – 8 yrs

## Salary

- \$121,000

## Area College Options

- Sullivan, University of Kentucky

## Resources

- [Pharmacist.com](http://Pharmacist.com) American Pharmacists Association

# PHLEBOTOMIST



## Description

- Phlebotomists draw blood for tests, transfusions, research, or blood donations. Some explain their work to patients and provide assistance when patients have adverse reactions after their blood is drawn.

## Education Required

- Certificate – 6 months

## Salary

- \$30,700

## Area College Options

- Gateway CTC, Hazard CTC, Henderson CTC, Hopkinsville CTC, Jefferson CTC, Madisonville CTC, Maysville CTC, Owensboro CTC, Somerset CTC, Southeast CTC, West KY CTC

## Resources

- [Aspt.org](http://Aspt.org) American Society of Phlebotomy Technicians

# PHYSICIAN (MD/DO)



## Description

- A physician diagnoses and treats patients as part of the health care team. There are many different specialties in the career.

## Education Required

- Doctorate – 8yr +
- Residency – 3-7 yrs +
- Fellowship – 1-3 yrs (optional)

## Salary

- Varies by specialty: \$150,000-\$700,000

## Area College Options

- University of Kentucky, University of Louisville, University of Pikeville

## Resources

- [Aamc.org](http://Aamc.org) Association of American Medical Colleges
- [Ama-assn.org](http://Ama-assn.org) American Medical Association

## Undergraduate Courses

- Major in anything you want as long as you take the pre-requisite courses necessary for acceptance at the medical school where you are applying.
- Check their websites for any changes.
- Current requirements are listed below.

## Undergraduate Info

- Should also work on research project(s)
- Focus on volunteer activities you can do to highlight your interest and commitment
- Get involved with school and community organizations.

Take the MCAT during your junior year of undergrad studies, apply to med schools and be prepared for a medical school interview. Also, keep track of programs/achievements for your professional portfolio and stay in touch with people for a recommendation letter.



### Required:

English 6 hrs  
Biology/Lab 8 hrs  
Inorganic Chem/Lab 8 hrs  
Organic Chem/Lab 8 hrs  
Biochemistry 3 hrs  
Physics/Lab 8 hrs

### Recommended:

Cell Biology  
Statistics  
Psychology  
Sociology



### Required:

English 6 hrs  
Biology/Lab 8 hrs  
Inorganic Chem/Lab 8 hrs  
Organic Chem/Lab 8 hrs  
Calculus 3 hrs  
Physics/Lab 8 hrs

### Recommended:

Biochemistry  
Genetics  
Psychology  
Physiology  
Statistics



### Required:

English 6 hrs  
Biology 12 hrs (upper level)  
Inorganic Chem 8 hrs  
Organic Chem 8 hrs  
(4 hrs can be biochem)  
Physics 8 hrs

### Recommended:

Biochemistry  
Genetics  
Molecular Biology  
Statistics

2015-16 GPA/MCAT

Avg GPA: 3.75  
Avg MCAT: 511.2

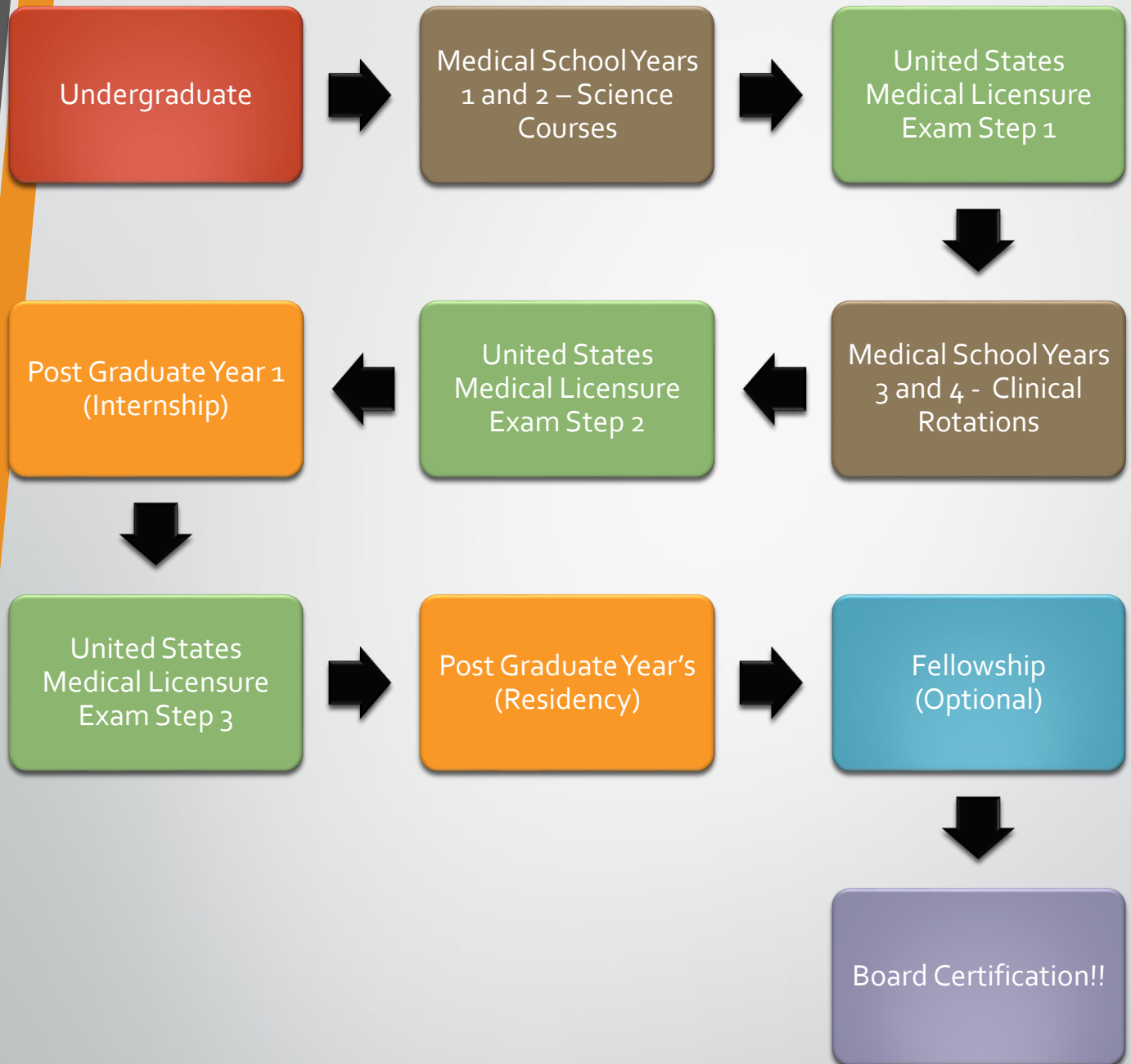
2015-16 GPA/MCAT

Avg GPA: 3.7  
Avg MCAT: 507

2015-16 GPA/MCAT

Avg GPA: 3.5  
Avg MCAT: 500

# Path of Medical Education



The following pages will look at medical specialties and sub-specialties. The key below explains how to determine the number of years, after medical school, required to complete the residency/fellowship requirements.

Specialty (# of Yrs)

• Sub-Specialty (# of Yrs)

Example:

To become a Pediatric Nephrologist you would need 4 yrs of college, 4 years of medical school, 3 years in Pediatric Specialty and 3 Years in the sub-specialty of Pediatric Nephrology. Total of 14 years.

# Years Required for Post-Graduate Specialties

## Allergy & Immunology (2)

## Anesthesiology (4)

## Dermatology (4)

## Emergency Medicine (3)

- Critical Care Med\* (1)
- Obstetric (1)
- Pain Medicine\* (1)
- Pediatric (1)

- Dermatopathology (1)

- Toxicology (2)
- Pediatric\* (2)
- Sports\* (1)

## Family Medicine (3)

## Internal Medicine (3)

## Medical Genetics (2)

## Neurological Surgery (7)

- Geriatric\* (1)
- Sports\* (1)

- Adv Heart Failure/Transplant (1)
- Cardio Disease (3)
- Cardiac Electrophysiology (1)
- Critical Care Med\* (2)
- Endocrinology (2)
- Gastroenterology (3)
- Geriatric\* (1)
- Hematology\* (2)
- Hematology/Oncology (3)
- Infectious Disease (2)
- Intervention Cardio (1)
- Nephrology (2)
- Oncology (2)
- Pulmonary Disease (2)
- Rheumatology (2)
- Sports\* (1)
- Transplant Hepatology (1)

- Biochemical (1)

- Endovascular Neuroradiology\* (1)

## Neurology (4)

## Nuclear Medicine (3)

## OB/GYN (4)

## Ophthalmology (3)

- Child (3)
- Clinical Neurophysiology (1)
- Endovascular Neuroradiology\* (1)
- Neuromuscular\* (1)
- Pain Medicine\* (1)

- Female Pelvic Reconstructive Surgery\* (3)

- Ophthalmic Plastic Surgery (2)

# Years Required for Post-Graduate Specialties

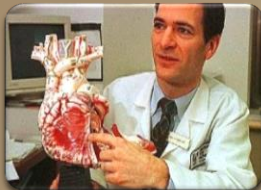
|  |   |   |   |
|--|---|---|---|
| <p><b>Orthopedic Surgery (5)</b></p> <ul style="list-style-type: none"> <li>• Adult Reconstructive (1)</li> <li>• Foot &amp; Ankle (1)</li> <li>• Hand* (1)</li> <li>• Musculoskeletal Oncology (1)</li> <li>• Ortho Sports (1)</li> <li>• Ortho Spine (1)</li> <li>• Trauma (1)</li> <li>• Pediatric (1)</li> </ul> | <p><b>Otolaryngology (5)</b></p> <ul style="list-style-type: none"> <li>• Otology-Neurotology (2)</li> <li>• Pediatric (2)</li> </ul>   | <p><b>Pathology (4)</b></p> <ul style="list-style-type: none"> <li>• Blood Bank/Transfusion (1)</li> <li>• Chemical (1)</li> <li>• Cytopathology (1)</li> <li>• Forensic (1)</li> <li>• Hematology* (1)</li> <li>• Microbiology (1)</li> <li>• Neuropathology (2)</li> <li>• Pediatric (1)</li> </ul> | <p><b>Pediatrics (3)</b></p> <ul style="list-style-type: none"> <li>• Adolescent (3)</li> <li>• Neonatal (3)</li> <li>• Cardiology (3)</li> <li>• Critical Care (3)</li> <li>• Emergency (3)</li> <li>• Endocrinology (3)</li> <li>• Gastroenterology (3)</li> <li>• Hematology/Oncology (3)</li> <li>• Infectious Disease (3)</li> <li>• Nephrology (3)</li> <li>• Pulmonology (3)</li> <li>• Rheumatology (3)</li> <li>• Sports (1)</li> <li>• Transplant Hepatology (1)</li> </ul> |
| <p><b>Physical &amp; Rehab (4)</b></p> <ul style="list-style-type: none"> <li>• Neuromuscular (1)</li> <li>• Pain Medicine* (1)</li> <li>• Spinal Cord (1)</li> <li>• Sports* (1)</li> </ul>   | <p><b>Plastic Surgery (2)</b></p> <ul style="list-style-type: none"> <li>• Craniofacial (1)</li> <li>• Hand* (1)</li> </ul>   | <p><b>Preventative Medicine (2)</b></p> <ul style="list-style-type: none"> <li>• Toxicology* (2)</li> </ul>   | <p><b>Psychiatry (4)</b></p> <ul style="list-style-type: none"> <li>• Addiction (1)</li> <li>• Child/Adolescent (2)</li> <li>• Forensic (1)</li> <li>• Geriatric (1)</li> </ul>   |
| <p><b>Radiation Oncology (5)</b></p>   | <p><b>Radiation Diagnostic (5)</b></p> <ul style="list-style-type: none"> <li>• Abdominal (1)</li> <li>• Cardiothoracic (1)</li> <li>• Endovascular Neuroradiology* (1)</li> <li>• Musculoskeletal (1)</li> <li>• Neuroradiology (1)</li> <li>• Nuclear (1)</li> <li>• Pediatric (1)</li> <li>• Vascular (1)</li> </ul> | <p><b>General Surgery (5)</b></p> <ul style="list-style-type: none"> <li>• Hand* (1)</li> <li>• Pediatric (2)</li> <li>• Critical Care (1)</li> <li>• Vascular (1)</li> </ul>   | <p><b>Thoracic Surgery (7)</b></p> <ul style="list-style-type: none"> <li>• Congenital Cardiac (1)</li> </ul>   |
| <p><b>Urology (5)</b></p> <ul style="list-style-type: none"> <li>• Female Pelvic Reconstructive Surgery* (2)</li> <li>• Pediatric (2)</li> </ul>   | <p><b>Internal Med / Pediatrics (4)</b></p> <ul style="list-style-type: none"> <li>• See others</li> </ul>  | <p><b>Sleep Medicine (1)</b></p>  |   |

# Physician Specialties



## Anesthesiologist

- Administer sedatives and monitor patients during surgery
- \$295,000



## Cardiologist

- Diagnosis and treatment of conditions effected the heart and cardiovascular system
- \$260.000



## Dermatologist

- Diagnosis and treatment of conditions effecting the skin, hair and nails
- \$205,000



## Emergency Room Physician

- Triage and emergency care of patients for all types of conditions
- \$205,000



## Family Physician

- Diagnosis and treatment of a variety of conditions across the lifespan
- \$150,000



## Gastroenterologist

- Diseases affecting the gastrointestinal tract are the focus of this specialty
- \$335,000



## Hematologist

- Diagnosis and treatment of blood disorders and malignancies
- \$315,000

# Physician Specialties



## Immunologist

- Diagnosis and treatment of the immune system
- \$140,000



## Intensivist

- Physician with special training and experience in treating critically ill patients
- \$270,000



## Neurologist

- Diagnosis and treatment of conditions effecting the nervous system
- \$177,000



## Obstetrician/Gynecologist (OB/GYN)

- Women's health issues and child delivery
- \$220,000



## Oncologist

- Diagnosis and treatment of cancers
- \$230,000



## Ophthalmologist

- Diagnosis, treatment and surgery for conditions effecting the eyes
- \$200,000



## Otolaryngologist

- Diagnosis, treatment and surgery for conditions effected the ears, nose and throat
- \$270,000

# Physician Specialties



## Pathologist

- Examines tissues, interprets lab results, and performs autopsies
- \$230,000



## Pediatrician

- Diagnosis and treatment of conditions effecting children
- \$150,000



## Preventative Medicine

- Health promotion, research and disease prevention
- \$135,000



## Psychiatrist

- Diagnosis and treatment of mental conditions
- \$165,000



## Pulmonologist

- Diagnosis and treatment of disease of the respiratory system
- \$258,000



## Radiologist

- Diagnosis of diseases and injuries using medical imaging techniques
- \$380,000



## Urologist

- Diagnosis and treatment of conditions effecting the genitourinary system
- \$265,000

# Physician Specialties in Surgery



## General Surgeon

- General surgeries (appendectomy, cholecystectomy, hernia repair, etc.)
- \$280,000



## Cardiac Surgeon

- Surgery involving the heart
- \$425,000



## Neuro Surgeon

- Surgery involving the brain and nervous system
- \$650,000



## Orthopedic Surgeon

- Surgery involving the repair of broken bones
- \$325,000



## Plastic Surgeon

- Surgery to restore function and aesthetics after injury or illness
- \$317,000



## Thoracic Surgeon

- Surgery involving the thoracic cavity
- \$415,000

# RESPIRATORY THERAPIST



## Description

- Respiratory therapists care for patients who have trouble breathing—for example, from a chronic respiratory disease, such as asthma or emphysema. Their patients range from premature infants with undeveloped lungs to elderly patients who have diseased lungs. They also provide emergency care to patients suffering from heart attacks, drowning, or shock.

## Education Required

- Associates – 2 yrs
- Bachelors – 4 yrs

## Salary

- \$57,000

## Area College Options

- Bellarmine, Morehead, NKU, Ashland CTC, Big Sandy CTC, Bluegrass CTC, Southcentral CTC, Elizabethtown CTC, Jefferson CTC, Madisonville CTC, Maysville CTC, Somerset CTC, Southeast CTC

## Resources

- [Aarc.org](http://Aarc.org) American Association for Respiratory Care

# REGISTERED NURSE



## Description

- Registered nurses are team players and typically contribute to a larger medical team's mission. Usually found in operating rooms, doctors' offices, intensive care, ambulatory care, and clinics, RNs focus on patient care and providing the resources they need.

## Education Required

- Associates - 2 yrs      RN, ASN
- Bachelors - 4 yrs      RN, BSN
- Masters - 6 yrs      RN, MSN

## Salary

- \$45,000 - \$66,000

## Area College Options

- ASN - All Kentucky Community Colleges, EKU, KSU, Midway, Morehead, WKU
- BSN - Bellarmine, Berea, Campbellsville, EKU, Georgetown, KCU, KSU, Lindsey Wilson, Midway, Morehead, Murray, NKU, Pikeville, Spalding, Sullivan, Thomas More, UK, UL, Union, WKU
- MSN - NKU

## Resources

- <http://www.allnursingschools.com/nursing-careers/registered-nursing/degrees/>

# RN Information

- ▶ Most colleges require you to complete your CNA certification, CPR certification and take prerequisite courses before being accepted into the RN program.
- ▶ You can be a Registered Nurse at different levels:
  - ▶ Associates degree - 2 years
    - ▶ Mostly found in rural areas, schools, nursing homes
  - ▶ Bachelors degree - 4 years
    - ▶ Mostly found in larger hospitals, corporations
  - ▶ Masters degree - 6 years
    - ▶ Used to either teach nursing or become a nursing administrator in a larger healthcare system
- ▶ As a nurse in a hospital, your first job will most likely be in an area where you are needed; not necessarily the department that you desire. However, after proving yourself on the job you have the flexibility to transfer departments when openings are available.
- ▶ Departments include:
  - ▶ Med/Surg
  - ▶ NICU
  - ▶ ICU
  - ▶ ER
  - ▶ L&D