



THE AQUARIUS
INSTITUTE

ULTRASOUND/SONOGRAPHY TECHNICIAN PROGRAM CATALOG



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1. ULTRASOUND/SONOGRAPHY TECHNICIAN CIP Code 51-0910	CS - 670	11
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Certificate of Approval to operate issued by the Division of Private
Business and Vocational Schools of the Illinois Board of Higher Education,
1 North Old State Capitol Plaza, Suite 333, Springfield, IL 62701

CATALOG GOOD THRU: JULY 01, 2023 – October 30, 2024
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WELCOME

TO THE *AQUARIUS INSTITUTE*

The *Aquarius Institute* offers comprehensive software and health care educational training and placement assistance in the Chicagoland area.

Programs consist of **26 - 52** weeks of hands-on classroom instructions, depending on the type of Program selected. .

The professionals at the *Aquarius Institute* are always available to support every student's needs. We take a hands-on personal and professional interest in our student's enrollment. By providing qualified and skilled instructors, career seminars, and placement assistance in the Chicagoland area, we are not only more than capable to educate our students, but to also prepare them for the job market that lies ahead.

Our Mission

To be the leading provider of career training with a specific interest in high demand job trends in America's ever changing job market.

TO ENROLL: 1-847-296-8870

Aquarius Methodology

Aquarius Institute provides Healthcare training through the use of adult learning methodology, cutting-edge course content and technology and real hands on practice. In an age of technological globalization, companies must find methods to garner the employee skills and technology and transform it into a competitive advantage. At *Aquarius*, we train our students to enter the business world with the knowledge and skills necessary to add immediate value to a company. However, technical knowledge alone is not enough. But rather, a fine integration of core competencies in knowledge and technical and communication skills empower the individual to deliver value-added work products in a clear and concise manner.

To achieve the aforementioned goal, *Aquarius* stresses the importance of individual attention, state-of-the-art facilities, and clinical internships held at affiliated Health Care Centers.

****Check regularly for expanded hours and holidays with your local Aquarius Institute center.***

Aquarius provides training in certification programs like ***MRI Technologist, Ultrasound Technician, and Licensed Practical Nurse Certification.***

Our training is focused on empowering graduates with the ability to grasp healthcare concepts in the human being which gives them the flexibility to solve healthcare issues that may arise during the course of the life span of clients/patient/customers. Certified professionals earn higher salaries than non-certified professionals; ***our professional certification programs give our students the edge in today's demanding job market.***

Aquarius strives to achieve providing its students with the feeling of complete satisfaction. Student satisfaction is *Aquarius'* motivation to move ahead as one of the leaders in the Allied Health Care Industry

Graduation Guidelines

Graduation depends on the valid marks scored in the examinations conducted at appropriate times after sufficient instruction has been provided. Passing and graduation are based upon the final examination and the percentage of marks scored in all the assignments.

Note: Students who achieve a below “C” grade point average are considered to have failed and will need to repeat the Program until they have achieved a passing grade.

Grading

90 % - or higher	“A”
80% - 89%	“B”
70% - 79%	“C”
60% - 69%	“D”
59% or less	“F”

Note: Students who score a below “C” course grade are considered to have failed and will need to repeat the course again until they have completed it successfully with a grade of “C” or above.

Scoring Procedure

The scoring procedure is determined by successful completion of all take-home assignments and scheduled exams. The number of exams is dependent on the duration of the program. All courses have a minimum of a mid-term and final exam; programs with multiple modules require, on average, one exam per module. Take-home assignments are also dependent on program duration and require, on average, one take-home assignment per module. All exercises, specifically, take-home assignments and examinations, are combined and then averaged to produce a final program grade.

Attendance

*Besides a grade of “C” or better, **80%** attendance is MANDATORY to be considered for the graduation.*

If a student acquires a sickness or gets into an accident that precludes them from attending classes via the established schedule, the student can retake the program at a later time without any penalty, or if the student wants to drop the program as a result of the aforementioned possibility than the refund policy process is applicable to them.

Grade Disclosure Policy

Once an assignment score is disclosed by the instructor to the student any discrepancies must be resolved within 5 days of the disclosure. Students will have the opportunity to communicate to their instructor about their concerns regarding an assignment score.

Exam Revaluation Policy

If a student is not satisfied with their exam score, the student has a right to reevaluate their exam. The student is required to pay a \$50.00 revaluation fee. The school will set up an appointment with the student to reevaluate their exam with an Aquarius representative present. Students are only allowed to reevaluate their exam 10 days from the day they took their exam. After 10 days exam scores will be finalized, and students will lose their right to reevaluate their exam.

Methods of Student Payments

Several payment options are available for registration fees and tuition payment:

- Students can obtain a private educational loan from their desired private bank.
- Students can make their payments by cash/checks.
- Aquarius Institute also accepts student payments via Visa, MasterCard, American Express, or Discover.

Installment Plans

Students have the option of paying for their program of choice via an installment plan. **Tuition Fees:** \$ 18,500

Payment Plan Option:

(No interest is charged for using the installment method of payment)

Note: A late fee of \$35 applies to all installment payments not paid on schedule; see installment plan sheet for details.

Retake Policy

If a student fails in any class of any program, earning a grade below C is considered as failing in any class of the program. The student is required to Retake the class and obtain a grade of C or better to pass. The student is required to pay \$2000.00 to Retake any failed class.

Buyers Right To Cancel

The student has the right to cancel the *enrollment agreement* until midnight of the 7th business the enrollment agreement has been signed by the student and the student has been accepted by *Institute*; and if the right to cancel is not given to any prospective student at the time the enrollment a is signed, then the student has the right to cancel the agreement at any time and receive a refund of a paid to date within 10 days of the cancellation.

Notice of cancellation must be made in writing and sent to:

Aquarius Institute
1011 E. Touhy Avenue
Suite 335
Des Plaines, IL. 60018
847-296-8870

Refund Policy

Aquarius Institute wants its students to be completely satisfied. Our refund policy allows our students to withdraw from the program up until 60% of the program has been completed. *Our refund policy also follows the guidelines set by Illinois statutes in relation to private business and vocational schools as per 105 ILCS 425.*

The detailed refund policy is as follows:

- A. When the notice of cancellation is given before midnight of the 7th business day after the enrollment but prior to the first day of class, all application/registration fees, tuition and any other charges shall be refunded to the student.
- B. When the notice of cancellation is given after midnight of the 7th business day following acceptance but prior to the close of business on the student's first day of class attendance, *Aquarius* will retain no more than the application/registration fee – which may not exceed \$150 or 50% of the cost of tuition, whichever is less.
- C. When the notice of cancellation is given after the student's completion of the first day of scheduled class attendance, but prior to the student's completion of 5% of the program, *Aquarius* will retain the application/registration fee, an amount not to exceed 10% of the tuition and other instructional charges or \$300.00 - whichever is less, plus the cost of any books or materials, which have been provided by *Aquarius*.
- D. When the student has completed in excess of 5% of the program of instruction, *Aquarius* will retain the application/registration fee, and the cost of any books and

materials which have been provided by *Aquarius*, but shall refund a part of the tuition and other instructional charges in accordance with the following:

Aquarius will retain an amount computed pro rata by days in class plus 10% of tuition and other instructional charges up to completion of 60% of the program of instruction. When the student has completed in excess of 60% of the program of instruction, *Aquarius* will retain the application/registration fee and the entire tuition and other charges.

- E. Applicants not accepted by *Aquarius* shall receive a refund of all tuition and fees paid within 30 days of the determination of non-acceptance.
- F. Application/registration fee will be \$150.00 at initial enrollment.
- G. Deposits and down payments shall become part of tuition.
- H. All student refunds will be made by *Aquarius* within 30 calendar days from the date of receipt of a student's written cancellation notice.
- I. *Aquarius* will refund all money paid to it under any of the following circumstances:
 - 1. *Aquarius* did not provide the prospective student with a copy of the student's valid Enrollment agreement.
 - 2. *Aquarius* cancels or discontinues the program of instruction in which the student has enrolled.
 - 3. *Aquarius* fails to conduct classes on days and times scheduled; detrimentally affecting the student, with the exception below.
- J. Due to bad weather (natural calamities), or due to the instructor's sickness, under this circumstance *Aquarius* Institute will reschedule the classes to make-up for the lost time.
- K. If a student is on a payment plan with *Aquarius* for their tuition payments, the above refund policy is applicable for that student also.
- L. In the event a student withdraws from a program, or if the student made lesser payments than determined by the refund policy, the student has to make up the difference of payment in 7 days from official withdrawal otherwise collection procedures will begin.
- M. Students who enroll in a package deal have to finish all the programs within one year from the date of enrollment. Otherwise, they are not eligible to attend the programs after one year and all the tuition fees paid for the programs will be retained by the *Aquarius Institute*.
- N. If there is an unresolved problem, please first address your written grievance to the School Director at the following address:
Aquarius Institute, Corporate Office, 1011 East Touhy Avenue, Suite 335, Des Plaines, IL 60018.

If after first contacting the School Director the grievance relating to the return policy and/or student contract/enrollment agreement remains unresolved, students may submit complaints to the following Board of Education office or website:

Illinois Board of Higher Education
1 North Old State Capitol Plaza, Suite 333
Springfield, IL 62701

Or at www.ibhe.org

Job Placement

We have created several programs designed to assist with placing you in the best possible **career** that compliments your specialization. Aquarius also conducts regular job fairs with local employers and other career services.

1. Our job placement program starts with an interview performed by our Job Placement Director to help you prepare a dynamic resume illustrating your core competencies and skill sets.
2. Several companies ask us to submit resumes for different Information Technology & healthcare skills. We forward to those companies resumes of our graduating students with qualifying performances.
3. Aquarius Institute job placement staff makes frequent calls to legal employers to find possible job openings for the students.
4. **Student Services** facilitate each student's intellectual, academic, social and career development. This reflects respect for cultural, racial, religious, social, intellectual, and economic diversity. Our commitment empowers students to become self-confident, self-reliant, productive, resilient, compassionate, and creative individuals. Services include making copies, resume review, interview skills and job placement assessment and assistance.

Note: Graduate Verification

I understand that if I am responsible to provide the following information as soon as it becomes available, after the completion of the program: Registry/License Exam: Each attempt and Result; Registry/License Number: After passing the exam; Employer's name; Employer's Address; Employer's phone number; Job Title (position held); Name of Supervisor; First day of Employment; Hourly Wage; and Average Hours per Week. AI also has permission to contact my employer for this information, if needed. I understand that this information will remain confidential and no personal information will be disclosed. Only anonymous statistical calculations are used for the Illinois Board of Higher Education's (IBHE) disclosure statement and the Illinois Department of Financial and Professional Regulations (IDFPR) statistics from AI.

Computer Labs

Students have access to the computer labs any time during regular hours while enrolled in a class at *Aquarius*. ***Food & drink is not allowed in the computer lab***

Conduct & Courtesy

Students should conduct themselves in a manner appropriate and conducive to a business/educational environment. Any student involved in obstruction/disruption of the training/business activities, theft, damage of *Aquarius* property, or misconduct, or altercations with a fellow student on Aquarius Institute campus will be subject to dismissal and no refunds will be issued. ***Altercations, Theft or damage will be reported to the police.***

STUDENT SUGGESTIONS

1. All the students are welcome to put their comments and suggestions into the “Comment, Suggestion and Complaint” box located in the administrative office.
2. If the complaints are not resolved within 5 business days by the administration, the student must see or write to the Director of Education at Aquarius Institute.

STUDENT COMPLAINTS

1. If there is any problem, please first address your written grievance/complaint to:

Director of Education
Aquarius Institute
Corporate Office
1011 East Touhy Avenue Suite 335
Des Plaines, IL 60018

2. If there is an unresolved problem, please first address your written grievance to the School Director at the above address. If after first contacting the School Director the grievance relating to the return policy and/or student contract remains unresolved, students may submit complaints to the following Board of Education office or website:

Illinois Board of Higher Education
1 North Old State Capitol Plaza, Suite 333
Springfield, IL 62701

Or at www.ibhe.org

EQUAL OPPORTUNITY ASSURANCE STATEMENT

It is the policy of Aquarius to comply with Section 188 of the Workforce Investment Act of 1998 (WIA), which prohibits discrimination against all individuals in the United States on the basis of race, color, religion, sex, national origin, age, sexual orientation, disability, political affiliation or belief and against beneficiaries on the basis of either citizenship/status as a lawfully admitted immigrant authorized to work in the United States or participation in any WIA Title 1 financially assisted program or activity.

Aquarius complies with Title VI of the Civil Rights Act of 1964, as amended, which prohibits discrimination on the basis of race, color, and national origin. The student needs to understand that if they need any instructional accommodation and/or have any special learning needs, they must notify the Aquarius administrator prior to enrollment.

Aquarius complies with the American with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973, as amended, which prohibits discrimination against qualified individuals with

disabilities. The student needs to understand that if they need any instructional accommodation and/or have any special learning needs, they must notify the Aquarius administrator prior to enrollment.

Aquarius complies with Section 188 of the WIA, which provides that persons with disabilities must be provided with reasonable accommodations and modifications for their disabilities. The section also requires that individuals with disabilities be given services alongside (not segregated from) people without disabilities, unless the program or activity providing services performs an individualized assessment of a particular individual with a disability and concludes that the individual needs special, segregated services.

Aquarius complies with the Age Discrimination in Employment Act of 1975, as amended, which prohibits discrimination on the basis of age.

The Aquarius Institute also assures that it will comply with 29 CFR, Part 37 and all other regulations implementing the laws listed above. The Aquarius Institute is an “equal opportunity employer/program” and “auxiliary aids and services are available upon request to individuals with disabilities.”

If any individual feels discriminated against based on any of the above conditions by an Aquarius Institute staff member, that individual may file a complaint with the director of Aquarius Institute. The director of Aquarius Institute is Jameel Ahmed; he can be reached at (847) 296-8870. If any individual needs to file a complaint, the individual can do so by contacting the director of Aquarius Institute or by writing to Aquarius Institute at 1011 East Touhy Avenue Suite: 335 Des Plaines, IL 60018.

SEXUAL HARASSMENT STATEMENT

The courts have determined that sexual harassment is a form of discrimination under Title VII of the U.S. Civil Rights Act of 1964, as amended in 1991.

Policy Statement:

It is the responsibility of each individual employee and program participant to refrain from sexual harassment, and it is the right of each individual employee and program participant to work in an environment free from sexual harassment.

Definition of Sexual Harassment:

According to the Illinois Human Rights Act, sexual harassment is defined as:

Any unwelcome sexual advances or requests for sexual favors or any conduct of a sexual nature when

1. Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or program participation in a Aquarius Program,
2. Submissions to or rejection of such conduct by an individual is used as the basis for employment or program participation decisions affecting such individual, or
3. Such conduct has the purpose or effect of substantially interfering with an individual's work performance or creating an intimidating, hostile or offensive working environment.

Other conduct commonly considered to be sexual harassment includes:

- Verbal: Sexual innuendos, suggestive comments, insults, humor and jokes about sex, anatomy – or gender – specific traits, sexual propositions, threats, repeated requests for dates, or statements about other employees, even outside of their presence, of a sexual nature.
- Non-verbal: Suggestive or insulting sounds (whistling), leering, obscene gestures, sexually suggestive bodily gestures, “catcalls,” “smacking” or “kissing” noises.

- Visual: Posters, signs, pin-ups or slogans of a sexual nature.
- Physical: Touching, unwelcome hugging or kissing, pinching, brushing the body, coerced sexual intercourse, or actual assault.

Sexual harassment most frequently involves a man harassing a woman. However, it can also involve a woman harassing a man or harassment between members of the same gender.

The most severe and overt forms of sexual harassment are easier to determine. On the other end of the spectrum, some sexual harassment is more subtle and depends to some extent on individual perception and interpretation. The trend in the courts is to assess sexual harassment by a standard of what would offend a “reasonable woman” or a “reasonable man,” depending on the gender of the alleged victim.

An example of the most subtle form of sexual harassment is the use of endearments. The use of terms such as “honey,” “darling,” and “sweetheart,” is objectionable to many women who believe that these terms undermine their authority and their ability to deal with men on an equal and professional level.

Responsibility of Individual Employees or Program Participants:

Each individual employee or program participant has the responsibility to refrain from sexual harassment in the workplace.

An individual or program participant who sexually harasses a program participant or fellow program participant is, of course, liable for his or her individual conduct.

The harassing employee or program participant will be subject to disciplinary action up to and including discharge or dismissal from employment or the program in accordance with the employment and/or program policy.

All Aquarius Institute students must refrain from sexual harassment and follow the policies set forth for the Aquarius Institute students. Students should read the details on sexual harassment found in this course catalog.

If any individual feels sexually harassed based on any of the above conditions by an Aquarius Institute student, that individual may file a complaint with the director of Aquarius Institute. The director of Aquarius Institute is Jameel Ahmed; he can be reached at (847) 296-8870. If any individual needs to file a complaint, the individual can do so by contacting the director of Aquarius Institute or by writing to Aquarius Institute at 1011 East Touhy Avenue Suite: 335 Des Plaines, IL 60018.

ULTRASOUND/SONOGRAPHY TECHNICIAN

CIP Code 51-0910

Description: The core competencies include registration of patients, setting up appointments, operating the systems and performing ultrasound procedures. Having completed this program the student will have sufficient knowledge to work as a diagnostic Ultrasound Technician with Abdominal & Echo specialty at an Ultrasound/Sonography center or in a Hospital's Sonography Dept. as an Ultrasound Technician. This is a one year program which also includes 800 hours of ultrasound Clinical Internship (classroom and clinical internship combined may take in excess of 18 months to complete). Upon successful completion of both Didactic and Clinical parts of the Program, the School will award a Certificate of Completion from the School. The refund policy will be based on the 300 hours of coursework.

It will be the responsibility of the School to provide Clinical Practicum opportunities to the Ultrasound students in Ultrasound Clinics or in Hospitals. The School reserves the right to assign the student to any available Clinical Site. Clinical Internship sites are located according to affiliations and relationships formed between Aquarius Institute and community and Chicagoland companies/organizations/facilities. And the clinical internship sites may be in excess of a 30 mile radius of Aquarius Institute's Des Plaines' campus.

Vocational Objectives:

This course has been designed to meet the increasing demand of Ultrasound Sonographers in the field of Diagnostic Medicine. According to present job market analysis a large number of trained people are required in the medical technologist field. Objective of this course is to provide efficient and well trained Sonographers to satisfy the present day job market needs.

Learning Outcomes:

Having completed this course the student will have sufficient knowledge and skills to work in an Ultrasound Sonography center or Hospital's Sonography Dept. as Ultrasound Technician with Abdominal & Echo specialty.

Program Outline:

Course Title		Lecture Clock Hours
I.	Anatomy and Physiology	85
II.	Medical Terminology	40
III.	Patient Management	10
IV.	Ultrasound Physics	35
V.	Ultrasound Scanning	60
VI.	Echocardiography	70
VII.	Ultrasound Clinical Internship	800
Held at Affiliated Ultrasound Clinical Sites		

Total Lecture Clock Hours: 300

TUITION & FEE

Registration Fee	\$ 150
Textbooks	\$500
Tuition Fee	\$ 17,850
Total Program Cost	\$18,500

Note: A late fee of \$35 per week applies to all installment payments not paid on schedule; see installment plan sheet for details

OTHER ESTIMATED COSTS:

Uniforms	\$50
Hepatitis Vaccine	\$100
Tuberculosis Test OR Chest X-ray	\$150
CPR Healthcare Provider Certification (see note page 14)	\$75
Liability Insurance	\$42
Total Other Estimated Costs	\$417

Notes:

1. You need to go to the HPSO web site to obtain the **liability insurance**. The cost is \$42 for a 12 month policy. <https://www.hpsso.com/Insurance-for-you/Students-recent-graduates>.
2. Personal Healthcare cost will vary according to individual's situation.
3. CPR courses are available twice a year at Aquarius. The alternate is for the potential student to go to CPR Associates in Chicago at Address: 2616 W Peterson Ave, Chicago, IL 60659, Phone: (773) 973-6933 or where ever the student wants to choose to obtain an AHA Healthcare Providers Certification card.
4. **Note to Foreign Students:** you may need to add an estimated cost of \$195 for education evaluation of diplomas and/or transcripts.

Admission Requirements:

General Requirements:

- Minimum 18 years of age
- Proof of graduation from a U.S. High School or equivalent as determined by appropriate accrediting agencies
- Responsible to notify the Aquarius administrator prior to enrollment, if student has a need for any instructional accommodations and/or any special learning needs
- Graduates from foreign schools require local evaluation (see note below)
- Official High School Transcript and have a **Grade Point Average (GPA) of 2.5** or above
- Provide a current resume if applicable
- Must possess knowledge of computers; must be able to use word processing programs
- Complete a personal interview with the Job Developer

Note: Foreign students may use Educational Credential Evaluators, Inc. (ECE) or any other U.S. equivalent agency. Contact Educational Credential Evaluators, Inc. (ECE) at <https://www.ece.org/> or ECE 101 W. Pleasant St. Suite 200 Milwaukee WI 53212-3963 Telephone number: 414-289-3400 available Monday through Friday, 9:00 a.m. to 4:00 p.m. CST. Educational Credential Evaluators, Inc. (ECE) evaluates a foreign diploma and transcript from an English translation only. Estimated cost \$195.

Health Requirements

- Students must submit obtain or have proof of a Hepatitis B vaccination, at the student's expense, 30 days prior to starting clinical internship (following acceptance into the program).
 - Must submit a doctor's note or titer result as proof or card for having Hepatitis B immunization.
 - Or have a signed refusal form in student's record
- Students must obtain malpractice insurance at the student's expense (following acceptance into the program)
- Students must have visual acuity, hearing acuity, speaking ability, digital dexterity and physical ability to perform the required assessment, procedures and related preparation and testing issues
- Students should have a reliable means of transportation
- Students must possess a valid CPR card prior to starting clinical internship (see note below)
- If the potential student does not have a Tuberculosis (PPD) test then the student must obtain a 2 step Tuberculosis test (PPD), at the student's expense, before start of the clinical internship
- Students must submit a PPD result or if the previous PPD was positive the student must submit a chest x-ray as proof that student is clear from TB disease

Note:

1. **Certification:** Student must have or obtain a valid American Heart Association (AHA) CPR/BLS Healthcare Provider Certification prior to starting first clinical internship and lasting at least one (1) year during enrollment in the program. (Please see page 13 under "Other Estimated Costs")

Length of Program: One year of course work and 800 hours of clinical internship (classroom and clinical internship combined may take in excess of 18 months to complete)

Aquarius Institute is not accredited:

Aquarius Institute is not accredited by a U.S. Department of Education recognized accrediting body.

Aquarius Institute does not have any articulation agreements:

Aquarius Institute does not have any articulation agreement with any college, organization, or facility.

Therefore the certificate or courses are not transferable to any other College, University or Institute.

Please consult with any institute of higher learning you are applying to for their transfer requirements.

Credentials Received: Upon completion of the program (classroom and clinical internship) the student will receive a Certificate of Completion and Official Transcript from Aquarius Institute.

Program Instructor License Requirements: Instructors teaching the field specialty part of the program must be Registered/Licensed/Certified per industry requirements.

Who Should Attend:

The course has been designed for the candidates who want to make a career in the Medical Diagnostic Field. The program can be a benefit to those who are already in health careers/services and want to improve their skills and widen their spectrum of activity; for example Nurses, Radiographers, Pharmacy Technicians, Physician's Assistants, etc.

Program Benefits:

Besides pursuing a career as Ultrasound Technician, this program acts as a base for the candidate to go for further advanced courses in Ultra-Sonography or to other courses like Radiology, MRI. Students can also go for jobs in sales and marketing of Ultra-Sonography equipment and consumables.

Job Prospect:

Overall employment of diagnostic medical sonographers is projected to grow much faster than the average for all occupations for 2023 to 2032 according to the U.S. Bureau of Labor Statistics.

Text Books:

Note: Editions will change as the author(s) update the book(s)

1. The Human Body In Health And Illness 7th Ed.

Authors: Frederic H. Martini, William C. Ober, Judi L. Nath, Edwin F. Bartholomew, and Kevin Petti

Publisher: Elsevier: 2021

ISBN: 978-0-323-71126-5

2. Medical Terminology: A Living Language 7th Ed.

Author: Bonnie F. Fremgen, Suzanne S. Frucht

Publisher: Pearson Prentice Hall Published: 2017

ISBN: 978-013-470120-2

3. Understanding Ultrasound Physics: Fundamentals and Exam Review; 4th Ed.

Author: Sidney K. Edelman

Publisher: Edelman; published 2012

ISBN: 0-9626444-5-5

4. Sonography Scanning: Principles and Protocols 5th Ed.

Author: M. Robert De Jong

Publisher: Elsevier Published: 2021

ISBN: 978-0-33235-9738-8

5. Echocardiography...from a Sonographer's perspective: The Notebook 8 and the Workbook 8

Author: Susan King DeWitt

Publisher: Camden Printing; Published: 2018

ISBN: None – comes directly from author

Reference Books & Audio/Video Aid (These are optional and not included in program)

Essentials of Ultrasound Physics

Editor: James A. Zagzebski

ISBN: 0815198523

Diagnostic Ultrasound: Principles and Instruments

Editor: Frederick W. Kremkau

ISBN: 0721643086

Ultrasonography: An Introduction to Normal Structure and Functional Anatomy

Editor: Reva A. Curry, Betty Bates Tempkin

ISBN: 0721645852

Note: Book Selection May Vary Per Instructor Recommendations and update of Editions

Course I: Medical Terminology

Lecture hours: 40

Each system will relate real-world applications and reviews

Introduction to Medical Terminology

Medical terminology at a glance; Building medical terms from word parts; Word roots (combining vowel/forms); Prefixes and Suffixes; Word building; Interpreting Medical Terms; Abbreviations which are given for each system; The Medical Record; Healthcare settings; Confidentiality

Body Organization

Body organization at a glance and illustrated; Levels of Body organization; Cells; Tissues; Organs and body systems; Body planes, regions, and body cavities; Directional and positional terms; Anatomical terms and abbreviations

Integumentary System

System at a glance and illustrated; Anatomy and physiology; Terminology and Anatomical terms; Pathology; Pharmacology; Diagnostic and therapeutic procedures

The Musculoskeletal System

Skeletal System at a glance; System illustrated; Anatomy and Physiology; Bones; Skeleton; Appendicular Skeleton; Joints; Anatomical Terminology; Pathology; Words used to build system; Diagnostic and therapeutic procedures; Pharmacology; Abbreviations.

Muscular System at a glance; System illustrated; Anatomy and Physiology; Skeletal muscle actions; Terminology; Anatomical terms; Pathology; Diagnostic and therapeutic procedures; Pharmacology; and Abbreviations.

The Cardiovascular System

System at a glance and illustrated; Anatomy and physiology; The heart; The blood vessels; Terminology - words used to build system; Anatomical terms; Pathology; Diagnostic and therapeutic procedures; Pharmacology

Blood and Lymphatic and Immune Systems

Systems illustrated; Anatomy and physiology of blood; Plasma and Platelets; Erythrocytes and leukocytes; Blood Typing; Anatomy and physiology for Lymphatic and Immune systems; Lymphatic vessels and Lymph nodes; Tonsils, spleen, and Thymus gland; Immunity; Terminology – words used to build systems; Anatomical terms; Pathology; Diagnostic and therapeutic procedures; Pharmacology

The Respiratory System

System at a glance and illustrated; Anatomy and physiology: Nasal cavity, Pharynx, Larynx, Trachea; Bronchial tubes, lungs, lung volumes and capacities; Respiratory muscles and rate; Terminology - words used to build system; Anatomical terms; Pathology; Diagnostic and therapeutic procedures; Pharmacology

Digestive System

System at a glance and illustrated; Anatomy and physiology; Terminology and Anatomical terms; Pathology Diagnostic and therapeutic procedures; Pharmacology; Abbreviations

Urinary System

System at a glance and illustrated; Anatomy and Physiology; Role of Kidneys in Homeostasis: Stages of Urine production; Terminology and Anatomical terms, Pathology; Diagnostic and therapeutic procedures; Pharmacology

Reproductive System

Female System at a glance and illustrated; Anatomy and physiology: Internal genitalia; Vulva; Breast; Pregnancy; Labor and Delivery; Terminology and Anatomical terms; Pathology; Diagnostic and therapeutic procedures; Pharmacology

Male System at a glance and illustrated; Anatomy and physiology: External organs of reproduction; Internal organs of reproduction; Terminology and Anatomical terms; Pathology, Pharmacology; Diagnostic and therapeutic procedures; Abbreviations

Endocrine System

System at a glance and illustrated; Anatomy and physiology: Adrenal glands, Ovaries, Pancreas, Parathyroid glands, Pineal gland, Pituitary gland, Testes, Thymus gland, Thyroid gland; Terminology and Anatomical terms; Pathology; Diagnostic and therapeutic procedures; Pharmacology

Nervous System

System at a glance and illustrated; Anatomy and physiology; Nervous tissue; Central nervous system; Peripheral nervous system; Terminology and Anatomical terms; Pathology; Diagnostic and therapeutic procedures; Pharmacology

Special Senses: the Eye and Ear

The eye illustrated; Anatomy and physiology: the eyeball, Muscles of the eye, the eyelids, Conjunctiva, Lacrimal apparatus; How we see: Terminology and Anatomical terms, Pathology; Diagnostic and therapeutic procedures; Pharmacology;

The ear illustrated; Anatomy and physiology: External ear, Middle ear, Inner ear; How we hear: Terminology and Anatomical terms; Pathology; Diagnostic and therapeutic procedures; Pharmacology

Special Topics

Pharmacology: Drug names and classifications; How to read a prescription; Routes and methods of drug administration; Pharmacological terms

Mental Health: Disciplines; Psychology; Psychiatry; Pathology; Therapeutic Procedures

Diagnostic Imaging: Imaging, terms and procedures

Rehabilitation Services: Physical Therapy; Occupational Therapy; Terms; Procedures

Surgery: Anesthesia; Instruments; Surgical positions

Oncology: Oncology and staging tumors

Pathology Terms; Diagnostic and therapeutic procedures; Abbreviations

Course II: Anatomy and Physiology

Lecture hours: 85

Body Systems

Introduction

Chemical Level of Organization

Atoms and molecules; types of cells; Chemical reactions; The importance of water in the body; Organic compounds

Cellular Level of Organization

An introduction to cells; Structure and function of the nucleus; How things enter and leave the cell; Cell life cycle

Tissue Level of Organization

Epithelial tissues; Connective tissue; Muscle and neural tissue

Integumentary System

Functional anatomy of the skin; Accessory Organs of the skin

The Skeletal System

Osseous tissue and bone structure: Introduction to the bones of the skeleton system; The physiology of bones

The Skeleton: Axial skeleton; appendicular skeleton

Joints: Joint structure and movement; Axial and appendicular joints

The Muscular System

Skeletal Muscle Tissue; the muscular system

The Nervous System: Neurons and neuroglia; Neurophysiology

The spinal cord, spinal nerves, and spinal reflexes: The functional organization of the spine Cord; An introduction to reflexes

The Brain and Cranial nerves: Functional anatomy of the brain and cranial nerves; Sensory and motor pathways

The Autonomic Nervous System: Functional anatomy and organization of the autonomic nervous system; Autonomic regulation and control mechanisms

The Special Senses: An introduction to the special senses: olfaction and gustation; Equilibrium and hearing; Vision

The Endocrine System

Hormones and intercellular communication; Hormones and system integration

Cardiovascular System

Blood: Characteristics of Blood; Functional anatomy of blood vessels

The Heart and Cardiovascular Function: The structure of the heart; Cardiac cycle; Coordination of cardiac output and peripheral blood flow

The Lymphatic System

Anatomy of the Lymph system and immunity; Nonspecific defenses; Specific defenses

The Respiratory System

Functional anatomy of the respiratory system; Respiratory physiology

The Digestive System

General organization of the digestive system; The digestive tract; Accessory digestive organs

Metabolism and Energetics: An introduction to cellular metabolism; Digestion and metabolism of organic nutrients; Energetics and thermoregulation

The Urinary System

Anatomy of the urinary system; Overview of renal physiology; Urine storages and elimination

Fluid, electrolyte, and acid-base balance

Fluid and electrolyte balance; Acid-base balance

The Reproductive System

Male and Female reproductive systems

Development and Inheritance: An overview of Human development; Genetics and inheritance

Course III: Patient Management

Lecture hours: 10

Unit I: The Profession of Radiologic Technology

Professional Organizations; Critical Thinking and Problem Solving Strategies

Unit II: Introduction to the Clinical Environment

Introduction to Clinical Education; Radiology Administration; Human Diversity

Unit III: Patient Care

Patient Interactions; History Taking; Safe Patient Movement and Handling Techniques; Vital Signs, Oxygen, Chest Tubes, and Lines; Infection Control; Aseptic Techniques; Non-aseptic Techniques; Medical Emergencies; Pharmacology

Unit IV: Ethical and Legal Issues

Professional Ethics; Health Records and Health Information Management; Medical Law

Course IV: Ultrasound Physics

Clock Hours: 35

The Basics

Graphs, definitions, units, power of ten, metric system, and complementary metric units

Sound; Sound waves, acoustic variables, acoustic parameters, in-phase and out-of-phase waves

Describing sound waves

Period, frequency, three “bigness” parameters, wavelength, propagation speed

Describing Pulsed Waves

Pulse duration, spatial pulse length, pulse repetition period, pulse repetition frequency, duty factor, parameters that describe both pulsed and continuous waves

Intensities

Measuring and reporting sound beam intensity, spatial considerations, temporal considerations, combining spatial and temporal factors, the “Ten Commandments” of intensity

Interaction of Sound and Media

Decibels (dB), attenuation, attenuation coefficient, reflection and transmission, impedance, summary: reflection, transmission, and refraction

Range Equation

Time-of flight or go-return time

Transducers

Basic transducer construction, transducer frequencies

Sound Beams

Shape of a sound beam, anatomy of a sound beam, determining focal depth, sound beam divergence, spherical waves, huygen’s principle

Axial and Lateral Resolution

Axial resolution, lateral resolution, focusing

Display Modes

A-mode – amplitude; B-Mode – brightness; M-mode-Motion

Two-dimensional Imaging

Mechanical transducer, linear phased arrays, annular, phased arrays, linear sequential arrays, vector arrays, slice thickness or elevational resolution

Real-time Imaging

Temporal resolution, imaging depth, number of pulses per image

Pulsed Echo Instrument

Pulser, beam former, receiver, output power vs. receiver gain

Displays and Processing

Display controls, analog and digital image data, magnification, coded excitation, spatial compounding, frequency compounding, edge enhancement, persistence, fill-in interpolation, emerging technology: elastography, PACS and DICOM, recording and archiving techniques

Dynamic Range

Dynamic range of system components, number choices

Harmonics and Contrasts Agents

Fundamental and harmonic images, tissue harmonics, pulse inversion harmonics, contrast agents, contrast harmonics

Hemodynamics

Flow, laminar vs. turbulent, energy gradient, forms of energy, energy losses in the circulation, stenosis, Bernoulli's principle, pressure-flow relationships, Ohm's Law, venous hemodynamics, hydrostatic pressure, breathing and venous flow

Doppler

Speed vs. velocity, the doppler equation, bidirectional doppler, continuous wave doppler, pulsed wave doppler, aliasing, color flow doppler, doppler artifacts, spectral analysis,

Optimizing Doppler Imaging

Normal incidence, color doppler gain, spectral doppler gain, aliasing, flow reversal vs. Aliasing, wall filter, wall filter vs. increasing scale

Artifacts

Image characteristics, basic assumptions of imaging system, reverberation, comet tail, shadow, enhancement, mirror image, speed error, lobes, refraction, slice thickness, lateral resolution, axial resolution

Quality Assurance

Requirements, objectives vs. subjective standards, tissue equivalent phantom, slice thickness phantom, performance measurements

Sonographers in the Clinical Setting

Major principles of medical ethics, informed consent, patient-sonographer interaction, sonographer-work environment interaction, standard precautions

Bio-effects

Converting sound energy into heat, risk-benefits relationship, study techniques, mechanisms of bio-effects, epidemiology, clinical safety and prudent use, electrical safety

Course V: Ultrasound Scanning

Lecture Hours: 60

General Principle

Clinical Guidelines

Professional and clinical standards to follow; proper use of ultrasound equipment/ergonomics; imaging criteria; image documentation criteria; case presentation

Scanning Planes and Scanning Methods

Purpose; scanning planes defined; scanning planes interpreted; how to use the transducer; how to take accurate measurements; patient positions; surface landmarks

Pathology

Scanning Protocol for Abnormal Findings

Purpose; criteria for evaluating abnormal findings; criteria for documenting abnormal findings; criteria for describing abnormal findings; required images for abnormal findings

Protocols include location, anatomy, physiology, sonographic appearance, patient preparation, transducer, breathing technique, and patient position.

Abnormal Scanning Protocols

Abnormal aorta survey, abnormal aorta required images, required images when the abnormal aorta is part of another study

Inferior vena cava scanning protocol

Inferior vena cava survey, Inferior vena cava required images, required images when the IVC is part of another study

Liver scanning protocol

Liver survey, liver required images, required images when the liver is part of another study

Gallbladder and Biliary Tract Scanning Protocol

Gallbladder and biliary tract survey, Gallbladder and biliary tract required images, required images when the gallbladder and biliary tract are part of another study

Pancreas Scanning Protocol

Pancreas survey, Pancreas required images, required images when the pancreas is part of another study

Renal Scanning Protocol

Renal survey, renal required images, required images when the kidneys are part of another study

Spleen Scanning Protocol

Spleen survey, spleen required images, required images when the spleen is part of another study

Image Protocol for full and limited Studies of the Abdomen

Liver study with full abdomen, aorta study with full abdomen, inferior vena cava study with full abdomen, gallbladder and biliary tract study with full abdomen, pancreas study with full abdomen, renal study with full abdomen, spleen study with full abdomen, aorta limited study, inferior vena cava limited study, right upper quadrant limited study, gallbladder and biliary tract limited study, pancreas limited study, renal limited study, and spleen limited study

Pelvic Scanning Protocols

Female Pelvis Scanning

Female pelvis survey, ovaries survey, Female pelvis required images

Transvaginal Sonography

Image orientation, transvaginal female pelvis survey, and Transvaginal female pelvis required images

Obstetrics scanning protocol for first, second, and third trimesters

Maternal anatomy, first trimester, early trimester anatomy and sonographic appearance, determining gestational age during the first half of first trimester, development and sonographic appearance during the first half of first trimester, determining gestational age during the second half of first trimester, development and sonographic

appearance during the second half of first trimester, second and third trimesters, development and sonographic appearance during the second and third trimester, sonographic appearance of fetal anatomy; skeletal, cardiovascular, respiratory, gastrointestinal, and genitourinary systems; intracranial anatomy, determining gestational age during the second and third trimesters, obstetrics survey, Female pelvis survey, first trimester survey, second and third trimester survey, required images for obstetrics, early first trimester images, later first trimester images, second and third trimester images, multiple gestations, the biophysical profile, required images for a biophysical profile

Male Pelvis Scanning Protocol for the Prostate Gland, Scrotum, and Penis

Prostate gland survey, prostate gland required images, scrotum survey, scrotum required images, penis survey, penis required images

Small Parts Scanning Protocols

Thyroid and parathyroid glands scanning

Normal variants, color Doppler flow characteristics, Thyroid gland survey, Thyroid gland required images

Breast Scanning Protocols

Clinical reasoning, breast lesion survey steps, required images for breast lesion, whole breast survey, and whole breast required images

Neonatal Brain Scanning Protocol

Cranial vault anatomy and sonographic appearance, neonatal brain survey, required images required images

Vascular Scanning Protocols

Abdominal Doppler and Color Flow

Basic principles, purpose of abdominal doppler and/or color flow, mesenteric arterial examination, renal arterial exam, venous flow, scanning tips, gynecological studies, breast sonography, scrotal sonography

Cerebrovascular Duplex Scanning Protocol

Pulse Doppler transducers, cerebrovascular duplex survey, cerebrovascular duplex required images

Peripheral Arterial and Venous Duplex Scanning Protocol

Lower extremity venous duplex ultrasonography, normal sonographic findings, lower scanning protocol exam protocol and required images, Lower extremity arterial duplex ultrasonography, necessary equipment, Lower extremity arterial duplex exam protocol and required images, data documentation

Echocardiography

Adult Echocardiography Scanning Protocol

Adult heart survey, Adult heart required images, M-Mode evaluation, Doppler evaluation

Pediatric Echocardiography Scanning Protocol

Pediatric heart survey, Pediatric heart required images

Guidelines

Guidelines for performance of the ultrasound of the abdominal and retroperitoneal areas; the scrotal area; the antepartum obstetrical and female pelvis; and of the prostrate and surrounding structures.

Course V: Echocardiography

Clock Hours: 70

Normal Cardiac Anatomy and Physiology

The big picture; Location and terminology; pericardium and heart wall; chambers, vessels, and valves; order and flow; cardiovascular physiology; the conduction system a quick review

Basic Embryology and Fetal Circulation

Basic embryology; fetal circulation; changes at birth; summary: Basic embryology and fetal circulation

Transthoracic Echocardiogram (TTE): the Introduction

The fundamentals; two-dimensional echo; motion mode echo (m-mode); Doppler echo; summary: introduction to echo; summary: standard view 2D echo views

The Transthoracic Echocardiogram (TTE)

Preparing for the TTE; parasternal, apical, subcostal, and suprasternal windows; summary: the standard TTE protocol, and diastolic function

The Transesophageal Echocardiogram (TEE)

TEE fundamentals; TEE windows, views, and probes; summary TEE

The stress Echocardiogram (SE)

SE fundamentals; SE advantages, indications, and contraindications; SE instrumentation; types of SE examinations; summary stress echo

Cardiac Catheterization (cath): the Basics

Cath fundamentals; cath procedures; catheterizations and risks; summary cardiac cath

Valvular Heart Disease (VHD)

Introduction; valvular stenosis; valvular regurgitation; mitral stenosis (MS); mitral regurgitation (MR); mitral valve prolapse (MVP); aortic insufficiency (AI); tricuspid stenosis (TS); pulmonic stenosis (PS); pulmonic insufficiency (PI); summary valvular heart disease

Infective Endocarditis (IE)

The facts, 2D echo; M-Mode; Summary Endocarditis

Prosthetic Heart Valves

Etiology and selection; bio prosthetic (tissue) valves (types, complications); mechanical valves; echo; sketches; summary: prosthetic heart valves

Ischemic Heart Disease (IHD)

The facts; summary: ischemic heart disease

Cardiomyopathy (CMO)

Definitions and categories; dilated CMO; hypertrophic CMO (HCMO); restrictive CMO; summary: dilated CMO, hypertrophic CMO, and restrictive/infiltrative CMO

Heart Failure

The facts; summary: heart failure

Myocarditis

The facts; echo; restrictive/infiltrative CMO vs. constrictive pericarditis' summary: pericarditis and constrictive pericarditis

Pericardial Effusion and Tamponade

Pericardial Effusion; Tamponade; summary: Pericardial Effusion and Tamponade

Myxomas, Tumors, Masses and Missiles

Tumors; Thrombus; missiles; summary: myxomas, tumors, masses and missiles

Diseases of the Aorta

Aortic septal defect; ventricular septal defect; patent ductus arteriosus; endocardial cushion defect; cleft mitral valve; pulmonic stenosis; coarctation of the aorta; Ebstein anomaly; tetralogy of fallot; transposition of the great arteries; hypoplastic left heart syndrome; summary: congenital anomalies

3D/RT3D (4D) Echocardiography

History of 3D Echo; real-time 3D (RT3D) echo (aka 4D Echo)

Ultrasound Clinical Practicum

Clock Hours: 800

The Institute assists the ultrasound students in completing at least 800 hours of clinical practicum. It will be the student's responsibility to complete the practicum requirements set by a National Registry for which the student is planning to write the certification exam. The Institute will refer the students to the clinical sites.

Registration or certification requirements for taking and passing national exams are not controlled by the Institute but by outside agencies and are subject to change by the agency without notice to the Institute. Therefore, the Institute cannot guarantee that graduates will be eligible to take certification exams, regardless of their eligibility status upon enrollment. Due to variability in individuals' academic experience prior to coming to the Institute, the Institute encourages students to take additional preparatory courses to enhance their ability to pass examinations.

Addendum: Institutional Disclosures Reporting Table

Institutional Disclosures Reporting Table Reporting Period: July 1, 2022 – June 30, 2023

INSTITUTION NAME: Aquarius Institute	Indicate all ways the disclosure information is distributed or made available to students at this institution: XX Attached to Enrollment Agreement XX Provided in Current Academic Catalog XX Reported on School Website Other: _____
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Per Section 1095.200 of 23 Ill. Adm. Code 1095:

The following information must be submitted to the Board annually; failure to do so is grounds for immediate revocation of the permit of approval.

DISCLOSURE REPORTING CATEGORY Information Updated: June, 2024	Magnetic Resonance Imaging (MRI) Technologist CIP 51-0920	Ultrasound/ Sonography Technician CIP 51-0910	Licensed Practical Nursing Program CIP 51-3901		
A) For each program of study, report:					
1) The number of students who were admitted in the program or course of instruction* as of July 1 of this reporting period.	25	62	14		
2) The number of additional students who were admitted in the program or course of instruction during the next 12 months and classified in one of the following categories:					
a) New starts	25	62	14		
b) Re-enrollments	0	0	0		
c) Transfers into the program from other programs at the school	0	0	0		
3) The total number of students admitted in the program or course of instruction during the 12-month reporting period (the number of students reported under subsection A1 plus the total number of students reported under subsection A2).	25	62	14		
4) The number of students enrolled in the program or course of instruction during the 12-month reporting period who:					
a) Transferred out of the program or course and into another program or course at the school	0	0	0		
b) Completed or graduated from a program or course of instruction	23	51	12		
c) Withdrew from the school	2	11	0		
d) Are still enrolled	0	0	2		
5) The number of students enrolled in the program or course of instruction who were:					
a) Placed in their field of study	19	40	12		
b) Placed in a related field	2	9	0		
c) Placed out of the field	1	1	0		
d) Not available for placement due to personal reasons	1	1	0		
e) Not employed	0	0	0		
B1) The number of students who took a State licensing examination or professional certification examination, if any, during the reporting period.	20	30	12		
B2) The number of students who took and passed a State licensing examination or professional certification examination, if any, during the reporting period.	17	23	12		
C) The number of graduates who obtained employment in the field who did not use the school's placement assistance during the reporting period; such information may be compiled by reasonable efforts of the school to contact graduates by written correspondence.	8	30	12		
D) The average starting salary for all school graduates employed during the reporting period; this information may be compiled by reasonable efforts of the school to contact graduates by written correspondence.	\$32	\$30	\$35		

*Course of Instruction is defined as a stand-alone course that meets for an extended period of time and is directly creditable toward a certificate or other completion credential; individual courses that make up a Program of Study are not considered courses of instruction.

Note: As indicated in the PBVS Administrative Rules, Section 1095.200, student retention and graduation rates must be maintained that are appropriate to standards in the field. Furthermore, a State licensing examination or professional certification examination passage rate of at least 50% of the average passage rate for schools within the industry for any State licensing examination or professional certification examination must be maintained.

- In the event that the school fails to meet the minimum standards, that school shall be placed on probation.
- If that school's passage rate in its next reporting period does not exceed 50% of the average passage rate of that class of schools as a whole, then the Board shall revoke the school's approval for that program to operate in this State. Such revocation also shall be grounds for reviewing the approval to operate as an institution.

Aquarius Institute 2024 – 2025 Academic Calendar
MRI Technologist Program
Ultrasound Sonography Program
Licensed Practical Nurse Program

Fall Start Session:
September 2024

Fall Ends Session:
N/A

Winter Start Session:
January 2025

Winter Ends Session:
N/A

Spring Start Session:
March 2025

Spring Ends Session:
N/A

Summer Start
Session: July 2024

Summer Ends Session:
N/A

Aquarius will be closed for all major holidays as well as the eve of 2 holidays: As Follows

Labor Day (September 2, 2024)

Thanksgiving Day (November 28, 2024)

Christmas Eve (December 24, 2024)

Christmas Day (December 25, 2024)

New Years Eve (December 31, 2024)

New Years Day (January 1, 2025)

Memorial Day (May 27, 2025)

Independence Day (July 4, 2025)

Call The Aquarius Institute 1-847-296-8870 and speak with a student counselor.
or visit www.aquariusinstitute.com for more information.

Convenient Chicago-area location:

O'Hare

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1-847-296-8870

