



Community Regional Medical Center

**2823 Fresno St.
Fresno, CA 93721**

Diagnostic Medical Sonography Program

School Catalog

Student Handbook

Jan 2012

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Community Regional Medical Center
Diagnostic Medical Sonography Program
School Catalog
January 2011 – December 2012

Community Regional Medical Center
2823 Fresno Street
Fresno, CA 93721
(559) 459-6000

www.communitymedical.org

This is an acknowledgement that this institution is a private institution and that it is approved by the Bureau for Private Postsecondary Education.

Any questions a student may have regarding this catalog that have not been satisfactorily answered by the institution may be directed to the Bureau for Private Postsecondary Education:

**2535 Capitol Oaks Drive, Suite 400
Sacramento California, 95833**

Mailing address is still the same:

P. O. Box 980818
W. Sacramento, CA 95798-0818

**Toll Free Number:
1 (888) 370-7589**

<http://www.bppe.ca.gov/>

“As a prospective student , you are encouraged to review this catalog prior to signing an enrollment agreement. You are also encouraged the School Performance Fact Sheet, which must be provided to you prior to signing an enrollment statement.”

“A student or any member of the public may file a complaint about this institution with the Bureau for Private Postsecondary Education by call 1(888) 370-7589 or by filing a complaint form, which can be obtained on the bureau’s Internet Web site <http://www.bppe.ca.gov/>.”

The address that the class sessions will be held is: 2823 Fresno Street, 3rd Floor , Trauma Critical Care Building, Medical Imaging Department, Fresno, CA 93721

CRMC shall provide a hardcopy of the school catalog to any person upon request. In addition, CRMC will provide student brochures to any interested person upon request. The School Catalog will be updated every year.

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Mission Statement

Community Regional Medical Center's mission is to improve the health status of the community and to promote medical education. We believe that consistent with the early foundations of Sonography education as a whole, the educational philosophy and practicing attitudes are evolved from and shared, especially with those of nursing and radiologic technology. We emphasize respect for all other medical, diagnostic, and therapeutic disciplines and applaud the complementary nature of their mutually supporting functions. The educational objective of the sonography program is to provide information and experiences, which will encourage the development of a self-motivated individual to become a responsible, well-trained sonographer.

WE THE FACULTY OF CRMC Diagnostic Medical Sonography Program BELIEVE:

Learning is a common endeavor of instructor and learner—a process of acquiring skill, knowledge, understanding and appreciation through active participation, problem solving, and application of scientific principles to real and simulated situations. Learning is facilitated when there is comfortable interaction among the learners and between the instructor and the learner, allowing for experiences and ideas to be shared.

The learning environment should be one that respects individuality and is unrestricted by considerations of age, sex, race, creed, social or economical status, or handicap. Learning is enhanced by commendation for work well done, encouragement after failure, kind assistance whenever the need is a rigorous one, and involves a strong commitment on behalf of the student. Students are expected to continuously strive to improve their knowledge and skills by participating in educational and professional activities. The educational objective of the program is to provide information and experiences, which will encourage the development of a self-motivated individual to become a responsible, well-trained sonographer.

Consistent with the early foundations of Sonography education as a whole, this educational philosophy and practicing attitudes are evolved from and shared, especially with those of nursing and radiologic technology. We emphasize respect for all other medical, diagnostic and therapeutic disciplines and applaud the complementary nature of their mutually supporting functions.

Faculty

Both programs will have the same program director, instructor, and clinical coordinator. Joy Guthrie is registered by the ARDMS in all ten specialty area offered by the American Registry of Diagnostic Medical Sonography. She has ten years of experience teaching a dual CAAHEP accredited sonography program at Merced College and received the honor of Who's Who in America's Teachers three consecutive years (2006-2009). Additionally, she received the Distinguished Educator award offered by the national sonography society, Society of Diagnostic Medical Sonography (SDMS) in 2010. She has over 26 years of clinical experience and also serves at the Ultrasound Supervisor at Community Regional Medical Center. She has a PhD in Public Health, Epidemiology and a Doctorate of Health Science (DHSc.) She is also the President of the Society of Diagnostic Medical Sonography. She has over 100 graduates that are gainfully employed in the field of sonography, a 98% placement rate, and 87% pass rate (100% in current class) for the ARDMS SPI examinations.

Description of the Profession

The Diagnostic Medical Sonographer/Vascular Technologist utilizes high frequency sound waves and other diagnostic techniques for medical diagnosis. The professional level of this health care service requires highly skilled and competent individuals who function as integral members of the health care team. The Diagnostic Medical Sonographer/Vascular Technologist must be able to produce and evaluate ultrasound images and related data that are used by physicians to render a medical diagnosis. They must acquire and maintain specialized technical skills and medical knowledge to render quality patient care.

Sonographers are highly trained individuals.

Scope of Practice

The Diagnostic/Vascular Technologist is a highly skilled individual qualified by academic and clinical experience to provide diagnostic patient services using ultrasound and related diagnostic techniques. The Diagnostic Medical Sonographer/Vascular Technologist is responsible for producing the best diagnostic information possible with the available resources. They acquire and evaluate data, while exercising discretion and judgment in performance of the clinical examination. The Diagnostic Medical Sonographer/Vascular Technologist is able to:

Obtain, review, and integrate pertinent

- Patient history, physical examination, and supporting clinical data to facilitate optimum diagnostic results.

Perform diagnostic procedures by

- Producing, accessing, and evaluating ultrasound images and related data that are used by physicians to render a medical diagnosis.

Provide interpreting physicians with an

- Oral or written summary of technical findings.

Provide patient and public education and

- Promote principles of good health.

Description of Educational Programs

The curriculum consists of classroom, laboratory, library research, and clinical practical experience. Laboratory sections are held on campus. The clinical education classes occur in two or more of the affiliate hospitals. The clinical component of the program requires attendance by the student outside the College calendar year.

Diagnostic Medical Sonography Program (General track)

Eighteen month program with combination of didactic and 1700 clinical hours to prepare the student for entry level as a diagnostic medical sonographer. In addition, the students will be prepared to sit for the national registry examination offered by the American Registry of Diagnostic Medical Sonography (ARDMS) in physics, Abdominal, and Obstetrical/Gynecology. Each course consists of homework assignments, quizzes, midterm, and a final exam. Additionally, a research paper, and case study project is included in the Abdominal, and Ob/Gyn courses.

The course requirements for the program including the time/days, lecture hours, and lab hours is included on the back page of the catalog. Complete course outlines and syllabi are provided on the first day of each class.

Each student must complete all classes in the didactic program in conjunction with completing the clinical education component.

Diagnostic Medical Sonography Program (Cardiac track)

Eighteen month program with combination of didactic and 1700 clinical hours to prepare the student for entry level as a diagnostic cardiac sonographer. In addition, the students will be prepared to sit for the national registry examination offered by the American Registry of Diagnostic Medical Sonography (ARDMS) in physics, and adult echocardiography.

Each course consists of homework assignments, quizzes, midterm, and a final exam. Additionally, a research paper, and case study project is included in the Advanced Echocardiography and Vascular courses.

The course requirements for the program including the time/days, lecture hours, and lab hours is included on the back page of the catalog. Complete course outlines and syllabi are provided on the first day of class.

Each student must complete all classes in the didactic program in conjunction with completing the clinical education component.

Clinical Case Study Days:

Policy:

The program requires students to attend Clinical Case Study Day(s) as part of their involvement and learning of ultrasound.

Procedure:

1. Sonography students in their clinical internship and their assigned partner present pathology investigated with ultrasound at the intern's clinical site.

2. The intern is responsible for selecting the pathology and preparing the cases to be shown. The intern must communicate this information at least one week prior to the presentation to the first year mentee.
3. The partner is responsible for researching the literature on the assigned pathology and preparing a 10-15 minute presentation on this subject.
4. All students are expected to conduct themselves professionally. There is to be no gum chewing, eating, or drinking during presentations.
5. Students are expected to be on time and to remain the full length of the presentations.
6. Students should NOT use Clinical Case Study Day for doctor or dentist's appointments or any other activity that prevents their full time attendance.

Students accepted into the **CRMC Diagnostic Medical Sonography Program (General)** are expected to attend all course lectures, case study days, clinical internship days and any other scheduled event that is part of the **CRMC Diagnostic Medical Sonography Program (General)** curriculum. Any student unable to attend during the program due to illness or an emergency must follow the procedure as outlined in the "Attendance" policy contained earlier in this document.

Standard for student achievement

American Registry of Diagnostic Medical Sonographers Examination

Upon successful completion of the **CRMC Diagnostic Medical Sonography Program** students are eligible to take the American Registry of Diagnostic Medical Sonographers examination. Each application is assessed individually for eligibility by ARDMS.

Although every student is encouraged to apply and successfully pass the Registry examinations, the decision to take the examinations is made voluntarily by the individual student. Examinations incur costs, which are the responsibility of the student. Students are reminded that ability to hold a position as a sonographer may be dependent upon successful completion of credentialing examinations. Completion of the exam does not indicate in any way a state license to practice sonography.

ARDMS Examinations:

Policy:

Registry fees are the student's responsibility; however, it is a program expectation that students will take the examinations in the specialties for which they qualify.

Procedure:

1. Students will be provided the necessary documentation to qualify them for Registry examinations.

2. Students will be counseled by the program director and faculty regarding studying to successfully pass credentialing examinations.
3. The ARDMS changes their requirements annually. It is the student's responsibility to inquire about the requirements that are in effect.
4. The ARDMS now has all examinations available on the computer. Students are not eligible to take these examinations until completion of the program. Application cannot be made until this date.
5. Information can be obtained from ARDMS, 51 Monroe St., Plaza East One, Rockville, MD 20852-2400, 1-800-541-9754.
6. The program writes a letter of authorization to the ARDMS on behalf of the student. This letter defines the specialties the student is eligible to take. Students who do not complete clinical training in designated specialties will not be eligible to take the exams in these specialties.

ADMISSIONS/ENROLLMENT

CRMC shall provide a hardcopy of the school catalog (general student brochure) and program specific brochure to any person upon request. In addition, CRMC will provide student brochures to any interested person as well as prospective students prior to enrollment.

A student must meet the following requirements to be considered for admission:

- Completion of a two-year Allied Health program that is patient-care related such as radiologic technology, nuclear medicine technology, licensed vocational nursing, registered nursing, respiratory therapy, physical therapy or have a baccalaureate degree in biologic sciences with patient care experience.
- Prerequisite course completion of the following courses with a cumulative GPA of 2.35 or greater
 - Medical terminology
 - General human anatomy
 - Principles of physiology
 - Beginning algebra
 - Concepts in physics
- Successful completion and passing of a drug screening test and background check
- Proof of U.S. citizenship (state photo ID license and social security card minimum)
 - A visa is not proof of US citizenship, and is not acceptable
- Proficient in the written and verbal language of college level English
 - All course work, classes and clinical work will be instructed in English only
 - A prospective student must be able to fully understand the terms and conditions of the enrollment agreement in English prior to acceptance
- Be able to meet the physical minimum standard for a sonography job qualification
- Completed application packet before application due date
- Panel interview

If English is not the student's primary language, and the student is unable to understand the terms and conditions of the enrollment agreement, the student shall have the right to obtain a clear explanation of the terms and conditions and all cancellation and refund policies in his or her primary language. If the recruitment leading to enrollment was conducted in a language other than English, the enrollment agreement, disclosures, and statements shall be in that language.

Enrollment and acceptance will be based on all of the above criteria and the results of the panel interview. The top finalist will be selected for admission into the program. There will be 4-6 students accepted into the General Sonography concentration and 2-3 students for the Cardiac concentration.

At the student's option, CRMC may accept payment in full for tuition and fees after the student has been accepted and enrolled and the date of the first class session is disclosed on the enrollment agreement.

A student's conduct can be a cause for dismissal. CRMC shall advise each student that a notice of cancellation shall be in writing, and that a withdrawal may be effectuated by the student's written notice or by the student's conduct, including, but not necessarily limited to, a student's lack of attendance.

Community Regional Medical Center

Sonography & Cardiac Programs

ADA Technical Standards

The Sonographer must have sufficient strength, motor coordination and manual dexterity to:

1. Transport, move, lift and transfer patients from a wheelchair or cart to a sonography table or bed; and
2. Move, adjust and manipulate a variety of sonographic equipment, including the physical transportation of mobile sonographic machines, in order to complete examinations on the patient according to established procedure and standards of speed and accuracy; and

The Sonographer must be capable of:

1. Handling stressful situations related to technical and procedural standards and patient care situations; and
2. Providing physical and emotional support to the patient during the sonographic procedures, being able to respond to situations requiring first aid and providing emergency care to the patient in the absence of, or until the physician arrives; and
3. Communicating verbally in an effective manner in order to direct patients during sonographic examinations; and
4. Visually recognizing anatomy on CRT screen; and
5. Reading and interpreting patient charts and requisitions for sonographic examinations; and

The Sonographer must have the mental and intellectual capacity to:

1. Calculate and select proper technical factors according to the individual needs of the patient and the requirements of the procedure's standards of speed and accuracy; and
2. Review and evaluate the recorded images on a CRT and archiving system for the purpose of identifying patient pathology if present, accurate procedural sequencing, completion of a diagnostic examination, and other appropriate and pertinent technical qualities.

ACCEPTANCE OF CREDITS FROM OTHER INSTITUTIONS

The prerequisite coursework credits will be accepted from any state or regionally accredited university. CLEP examination scores will also be accepted for credit. There are no admissions requirements for ability-to-benefit students. Specific coursework in sonography will not be accepted from another college or university. The institution has not entered into an articulation or transfer agreement with any other college or university.

TRANSFERABILITY

NOTICE CONCERNING TRANSFERABILITY OF CREDITS AND CREDENTIALS EARNED AT OUR INSTITUTION

The transferability of credits you earn at CMC is at the complete discretion of an institution to which you may seek to transfer. Acceptance of certificate you earn in CMC is also at the complete discretion of the institution to which you may seek to transfer. If the credits or certificate that you earn at this institution are not accepted at the institution to which you seek to transfer, you may be required to repeat some or all of your coursework at that institution. For this reason you should make certain that your attendance at this institution will meet your educational goals. This may include contacting an institution to which you may seek to transfer after attending CRMC to determine if your credits certificate will transfer.

CANCELLATION/WITHDRAWAL AND REFUND POLICIES

STUDENT'S RIGHT TO CANCEL

The student may cancel their Enrollment Agreement at any time prior to midnight on the 7th (seventh) day following the date of their signature or the first day of class, whichever is later, and receive a refund of all fees paid (minus the application fee). The student must supply the Program Director with a signed letter informing the Program Director of their intent to withdraw from the program within the allotted acceptable time. Upon expiration of this cancellation period, all fees paid are subject to the refund policies outlined in this agreement.

REFUND POLICIES

State of California Student Tuition Recovery Fund (STRF)

It is a state requirement that a student who is a resident of California, who pays his or her own tuition, either directly or through a loan, pay a state imposed fee for the Student Recovery Fund. Although it is based on the actual amount of total tuition cost (regardless of the portion that is prepaid), it is charged on a calendar year basis. Please refer to the Schedule of Tuition and Fees set forth above. These fees support the Student Tuition Recovery Fund (STRF), a special fund established by the California State Legislature to reimburse students who might otherwise experience a financial loss as a result of (a) the closure of the institution, (b) the institution's breach or anticipatory breach of the agreement for the course of instruction, or (c) a decline in the quality or value of the course of instruction within the 30-

day period before the institution's closure. If you are not a resident of California, you are not eligible for protection under or recovery from the Student Tuition Recovery Fund. Participation is mandatory for California residents.

It is important that enrollees keep a copy of any enrollment agreement, contract, or application to document enrollment, tuition receipts or canceled checks to document the total amount of tuition paid. Such information may substantiate a claim for reimbursement from the STRF, which must be filed within one year of the Bureau's notice to the student of their rights under the STRF, or if no notice of rights is served to the student, within four years of institution's closure. For further information or instructions contact the Bureau for Private Postsecondary and Vocational Education, 400 R. Street, Suite 5000, Sacramento, CA 95814, (916) 445-3427.

You must pay the state-imposed assessment for the Student Tuition Recovery Fund (STRF) if all of the following applies to you:

1. You are a student in an educational program, who is a California resident, or are enrolled in a residency program, and prepay all of part of your tuition either by cash, guaranteed student loans, or personal loans, and
2. Your total charges are not paid by any third-party payer such as an employer, government program or other payer unless you have a separate agreement to repay the third party.

You are not eligible for protection from the STRF and you are not required to pay the STRF assessment if either of the following applies:

1. You are not a California resident, or are not enrolled in a residency program, or
2. Your total charges are paid by a third party, such as an employer, government program or other payer, and you have no separate agreement to repay the third party.

The State of California created the Student Tuition Recovery Fund (STRF) to relieve or mitigate economic losses suffered by students in educational programs who are California residents, or are enrolled in a residency program attending certain schools regulated by the Bureau for Private Postsecondary Education.

You may be eligible for STRF if you are a California resident or are enrolled in a residency program, prepaid tuition, paid STRF assessment, and suffered an economic loss as a result of any of the following:

1. The school closed before the course of instruction was completed.
2. The school's failure to pay refunds or charges on behalf of a student to a third party for license fees or any other purpose, or to provide equipment or materials for which a charge was collected within 180 days before the closure of the school.
3. The school's failure to pay or reimburse loan proceeds under a federally guaranteed student loan program as required by law or to pay or reimburse proceeds received by the school prior to closure in excess of tuition and other costs.
4. There was a material failure to comply with the Act or the Division within 30-days before the school closed or, if the material failure began earlier than 30-days prior to closure, the period determined by the Bureau.
5. An inability after diligent efforts to prosecute, prove, and collect on a judgment against the institution for a violation of the Act.

However, no claim can be paid to any student without a social security number or a taxpayer identification number.

CRMC DMS Program Student Refund Policy (California Resident)

If the student wishes to withdraw from the program they are to notify the program director of their wish to cancel the enrollment agreement or to withdraw from the institution and obtain a refund. The following procedure will apply to obtain a refund of tuition:

A student who withdraws from the CMC DMS Program will receive a refund of tuition, if one is due, within 30 days following the student's withdrawal. In the event that a student does not begin classes, all monies paid for tuition and fees, with the exception of the \$50 application fee, are refundable. In addition, the student may withdraw from the program after instruction has started, and may be entitled to a refund if the student has completed 60% or less of the term of instruction. The following formula will be used to determine the amount of refund to the student: $(\text{term tuition divided by term hours}) \times \text{term hours attended} = \text{the amount owed by the student}$. The refund will be the amount in excess paid by the student.

If the student has received federal student financial aid funds, the student is entitled to a refund of monies not paid from federal student financial aid program funds.

Fees will be refunded according to the refund percentage. An administrative fee of \$100 will be assessed to any student who withdraws or goes on leave from the institution on or after the first day of the semester. Refunds are made within 30 days of the withdrawal date.

Attendance:

Policy:

Students accepted into the **CRMC Diagnostic Medical Sonography Program** are expected to attend all course lectures, case study days, clinical internship days, and any other scheduled event that is part of the Program curriculum. Any student unable to attend during the program due to illness or an emergency must follow the procedure outlined below. Students will be responsible for obtaining any information presented and/or handed out during their absence.

Procedure:

1. In the event lecture is to be missed, the student must call the course instructor before class and notify them as to their absence.
2. If a case study day or clinical internship day is to be missed, the student must call the Program Director.

LEAVE OF ABSENCE POLICY:

The program allows for a leave of absence of no more than one month within the eighteen month program. The student must continue to communicate with the program director and attempt to complete assignments. If the extent of the leave is projected to be more than one month in duration, the student may either withdraw from the program or retake the course that was missed and complete the requisite clinical hours within the subsequent program.

Sick Leave:

Policy:

Students enrolled in the first year of the program should strive to avoid being sick during class times and Clinical Case Study Days.

Procedure:

1. Students who are sick **MUST** phone the Program Director and the clinical site no later than 8:00 am on the day they are sick if it is a class or Clinical Case Study Day.
2. It is up to the faculty whether or not students can make up quizzes or tests for absence.
3. Students with children are not allowed to bring their sick children to class.

Jury Duty:

Policy:

Jury duty is a civic obligation, and it is an individual's responsibility to serve when summoned. However, students called to serve should work with officials to defer service until program completion, whenever possible.

Procedure:

1. Students should report summons to the program director as soon as possible.
2. Program faculty will inform the student of the academic material that needs to be covered. All quizzes and exams will be given to the student to get caught up.
3. Clinical time missed in most cases cannot be made up. (All absences, regardless of reason, can result in the student becoming ineligible for ARDMS Board examinations during that year.)

Pregnancy:

Policy:

It is the responsibility to notify the program director of the pregnancy.

Procedure:

1. The student must receive written permission from the physician to continue the program.
2. Pregnant students need to be aware that there is a high probability that their didactic year will be extended since required courses are only offered once a year.
3. Pregnant students will not be assigned to a shared diagnostic ultrasound medicine laboratory. A pregnant student may not participate in any ultrasound related study, which is conducted in a fluoroscopy, angiography, or cardiac catheterization room, or perform procedures on patients with radioactive implants.
4. An effort will be made by the program director and the associate faculty to insure that pregnant students are assigned to a “safe” work area. This may result in having to extend the student’s internship as this is on a space available basis.
5. Students need to be aware that the biggest risk to the unborn occurs during the first trimester. Students need to be tested for pregnancy as soon as they feel there is a reason to be so that appropriate adjustments can be made.

Military Absence:

Policy:

CRMC acknowledges the responsibility of men and women to fulfill service. This policy applies to military absence resulting from service in the United States Armed Forces or in a National Guard or Reserve units.

Procedure:

1. Students should notify the program director of the military status upon acceptance into the program.
2. A reservist may take excused leave time up to 10 days, and a leave of absence for any additional time off required; however the student and program director should attempt to have any non-emergent service deferred until after graduation.
3. Extended time off for reservist duty may result in ineligibility to write ARDMS boards in the year in which the student graduates.
4. Program faculty will work with the student to complete academic material missed during emergency leave; non-emergency military absence will require the student to receive academic material at the instructor’s discretion.

5. Clinical time missed for emergency missed for emergency military absence may be excused if program officials feel the student's clinical performance has been adequate.
6. Time off for non-emergency absence may be required to be made up including returning after graduation, if necessary, on a space available basis.

Funeral Leave:

Policy:

Students will be granted excused funeral leave when appropriate.

Procedure:

1. Requests for funeral leave should be submitted to the program director or coordinator by phone and followed up with an absence form.
2. Funeral leave will be excused for funerals of spouse, parents, child, grandparent and siblings. All other requests will be reviewed on an individual basis.
3. As a general rule, two days are allowed.
4. Any extended time may result in lengthening of the program and ineligibility to write ARDMS Boards.

Tardiness:

Policy:

Students are required to be punctual for both didactic and clinical training.

Procedure:

1. Students who are late reporting to their clinical site will be warned once verbally. The second time they are tardy the clinical site must call and leave a message with the program director. The third time the student is put on probation, and this may lead to program dismissal.
2. Students are expected to be in the classroom before the start of class. Students who are more than ten minutes late for class may be asked to leave.
3. Quizzes or exams are not lengthened for students who are tardy.

Progression & Dismissal:

Policy:

The following is the published disciplinary action plan.

Procedure:

The program director may require disciplinary action, including the withdrawal of a student from the program, for a variety of reasons. Immediate dismissal from the program may be indicated, based on the severity of the infraction. Reasons include (but are not limited to) the following:

- Disregard of program rules and regulations
- Unsatisfactory performance
- Insubordination
- Misconduct
- Neglect of duty
- Breach of medical, legal or moral ethics
- Theft of property from the hospital premises or college
- Substance abuse
- Use of, possession of, or intent to deliver controlled substances
- Possession of or use of a firearm on hospital grounds
- Failure to maintain the minimum required passing grade in all course work including clinical practicum
- Breach of confidentiality
- Willful destruction of/or defacement of property
- Willful abuse of/or neglect of a patient, visitor, employee or other persons

Progression & Dismissal:

Policy:

The program permits only full time students. All students must earn a minimum academic grade of 2.0 in each course.

Procedure:

1. Students who have a GPA for the course of less than a 2.00 will be dismissed from the program.
2. Other reasons for dismissal: Refer to policies on Moral & Ethical Behavior, Cheating, and Sexual Harassment.

Progression & Dismissal Clinical Rotation:

Policy:

The program permits only full time clinical students. The program requires a minimum clinical grade of 2.0.

Procedure:

1. Students who earn a B-, C+ or C clinical grade are on probation and are informed regarding areas of weakness.
2. Students earning a B- or less are expected to improve their grade the next course level. They are put on weekly evaluations until clear improvement is demonstrated.
3. For other reasons for program dismissal refer to policies on Tardiness, Smoking, Moral & Ethical Behavior, and Sexual Harassment.

Disciplinary:

Policy:

Students who are NOT in compliance with the policies and procedures of this manual are subject to disciplinary action.

Procedure:

1. Written warning: A confidential memo or letter will be addressed to the student describing the infraction. The Program Director will arrange a meeting with the student to discuss and determine a course of action to resolve the situation. A description of the infraction and the agreed upon course of action will be presented in writing to the student by the Program Director. A copy of that document will then be forwarded to the Medical Director and a second copy placed in the student's file. A follow-up meeting will take place no longer than 2 weeks following this report to determine if further action is necessary.
2. Probation: A student may be placed on probation on the recommendation of the Program Director. The length of probation will be determined by the course of action necessary to remedy the infraction. The student will sign written and verbal notice of the probationary terms with a copy placed in their permanent file.
3. Students who feel that disciplinary action has been taken in an unfair manner are referred to the Program Director.

Moral and Ethical Behavior and Cheating Policy:

Policy:

Immoral or unethical behavior will be cause for immediate probation, suspension, or dismissal. The unlawful manufacture, distribution, dispensation, possession, use, sale, disposal, introduction or transfer of drugs, alcohol, narcotics, or any other regulated substance will be grounds for immediate dismissal.

Procedure:

1. Students are expected to use verbal and written language, which does not intentionally demean members of society.
2. Students convicted of any criminal drug statute must notify the program director no later than 5 days after such a conviction. Note: This policy meets the requirements of the Drug-Free Workplace Act of 1988.
3. Sexual misconduct with a patient, staff, or student will result in disciplinary action.
4. You, the student, are expected to conduct yourself with integrity. If you cheat, or aid someone else in cheating, you violate a trust. Cheating includes, but is not limited to copying answers on tests on assignments, glancing at nearby test papers, swapping papers, stealing, plagiarizing, illicitly giving or receiving help on exams or assignments, using pre-marked tests or answer sheets, cribbing, or using texts, notebooks, copying, or any similar means to score an answer sheet. The following actions will be taken against anyone who engages in the above practices:
 - You will receive a grade of zero on the work (exam, assignment, lab, quiz, etc.) where the cheating occurred.
 - A report of the Incident Report will also be placed in your file. He/she may file a report in your permanent record or take further disciplinary action such as suspension or expulsion from the program.

Sexual Harassment:

Policy:

Mutual respect, consideration, and courtesy are expected of everyone. Students have the right to pursue their education free from all forms of discrimination and conduct which can be considered harassing, coercive, or disruptive including sexual harassment.

Federal and state law prohibits sexual harassment. According to the requirements of both agencies, sexual harassment includes unwelcome sexual advances, requests for sexual favors, sexually motivated physical contact, and other verbal or physical conduct of sexual nature when:

- Submission to such conduct is made, either explicitly or implicitly, a term or condition of an individual's status;
- Submission to or rejection of such conduct by an individual is used as the basis for evaluation affecting such an individual;

- Such conduct is intended to or does interfere with an individual's work or creates an intimidating, hostile, or offensive work environment.

Procedure:

1. It is the responsibility of students who believe they have been harassed to report such behavior so the behavior can be investigated and appropriate action taken.
2. It is the responsibility of program officials, clinical staffs and faculty to immediately report to appropriate administration or department head any complaint of sexual harassment, which is brought to their attention.
3. It is the responsibility of the student to report any incidents of harassment they have witnessed or been informed of.
4. Investigation will be conducted under the aegis of administration responsible for monitoring the behavior of the individual accused of harassment. Investigation will include interviews with all relevant individuals.
5. Legal counsel, to discuss the findings will be recommended if warranted.
6. Administration will meet with the concerned student to discuss action.
7. If the investigation establishes that the alleged conduct did not occur, the complainant must be informed that false sexual harassment claims cannot be made without serious repercussions.
8. Retaliation against the student who brings charges will not be permitted.
9. Individuals involved who are dissatisfied with the outcome of action or investigation may appeal through the grievance policy.

STATEMENT OF CHARGES

The student is responsible for the following tuition and fees pertaining to the program's required course of study completed during the designated enrollment period. Fees must be paid in accordance with the schedule set forth below. At the student's option, CRMC may accept payment in full for tuition and fees after the student has been accepted and enrolled and the date of the first class session is disclosed on the enrollment agreement.

Schedule of total charges for a period of attendance and an estimated schedule of total charges for the entire educational program. The student is solely responsible to purchase the required textbooks for each course of study, which is over and above the charges listed below.

Application Fee	\$50.00	Must accompany application
STRF Fee	\$37.50	Must be paid on or before the first day of class (nonrefundable)
First Payment	\$3,200.00	Payable on or before the first day of class
Second Payment	\$3,200.00	Payable on or before the beginning of the fifth (5 th) month of class
Second Payment	\$8,550.00	Payable on or before the beginning of the tenth (10 th) month of class
TOTAL	\$15,037.50	

Books:

Policy:

Program officials select textbooks for the courses taught. Students are expected to purchase these books prior to the start of classes. Book fees are over and above the school fee charges.

Procedure:

1. Textbooks in ultrasound are expensive, and faculties do the best they can to minimize this cost.
2. Books are selected not just for the course in which they are required, but also for future reference during the first five years of the student's career in ultrasound.

Financial Aid

TITLE IV

The institution does not participate in federal and state financial aid programs.

STUDENT LOAN POLICIES

LOANS

In the event the student obtains a loan to pay for an educational program, the student will have the responsibility to repay the full amount of the loan plus interest, less the amount of any refund.

If the student is eligible for a loan guaranteed by the federal or state government and the student defaults on the loan, both of the following may occur:

- The federal or state government or a loan guarantee agency may take action against the student, including applying any income tax refund to which the student is entitled to reduce the balance owed on the loan.
- The student may not be eligible for any other federal student financial aid at another institution or other government assistance until the loan is repaid.

Bankruptcy

The institution does **not** have a pending petition in bankruptcy, is not operating as a debtor in possession, has not filed a petition within the preceding five years, or had a petition in bankruptcy filed against it within the preceding five years that resulted in reorganization under Chapter 11 of the United States Bankruptcy Code (11 U.S.C. Sec. 1101 et seq.)

PLACEMENT SERVICES

The program does not provide a specific placement services, however, each student is provided a rotational clinical experience to allow prospective employers to work with the student within the confines of their respective educational program.

Student Brochure

The institution shall provide a school brochure to any prospective student upon request.

Facilities and Equipment

The classroom and laboratory used for the Diagnostic Medical Sonography Program (both general and cardiac track) are housed within the medical imaging department at Community Regional Medical Center. The equipment utilized within the program includes seven Acuson Sequoia high resolution ultrasound machines and five Philips IE 33 echocardiography machines.

Library Resources

There are two Library sources; the Ultrasound Library is housed in the Program Directors office and has over 40 ultrasound references books, training DVDs, and registry review books/cards. This is available

to all sonography students during working hours and books can be checked out after hours. The main hospital Library is accessible to all sonography students that are accompanied with a staff sonographer.

Student Services

Students enrolled in the CRMC Diagnostic Medical Sonography Program have access to the following services provided at the hospital: Workman's Compensation, Health and Wellness services, cafeteria, library, and access to continuing medical education programs offered to the staff of the Radiology and Cardiology Departments.

Housing

Community Regional Medical Center does not have dormitory facilities under its control. Due to the current depressed economy in Fresno County (many house foreclosures) the availability of housing near the medical center is favorable. The average cost of a detached home in Fresno County is \$271,999. The 2009 cost of living index in Fresno County: 87.3 less than the U.S average. Retrieved on 1/3/2011 from: http://www.city-data.com/county/Fresno_County-CA.html#ixzz1A556bKsW

Grievances

Policy:

Students who are dissatisfied with the actions taken by the Program Director may follow the Grievance Policy available through the Medical Imaging Department. Within the Medical Imaging Department, the student would file a grievance form and submit it to the Director of Medical Imaging. As per the institutions regulations, depending on the nature of the grievance, the Director would either resolve the grievance or forward it to the Human Resources Department for further review.

Recordkeeping: Custodian of Records

According to Article 9 of the act (94900) the following records will be kept in a locked file in the Program Director's office:

Academic Records

- The student's records include, but are not limited to, the name, address, telephone number, and e-mail address which will be organized both chronologically and alphabetically.
- The midterm and final exams, as well as the Final Grades
- The courses and units on which the certificate of Completion is based
- The grades earned by each student on all courses within the curriculum
- Health assessment, background check, immunization records, and proof of liability insurance.

Financial Records

According to Article 9 of the act (94900) the financial records will be kept in a locked file in the Financial Department at Community Regional Medical Center.

Accidents:

Policy:

Any accident occurring during scheduled clinical program time must be reported to the clinical supervisor. All incidents will ultimately be reported to the program director.

Procedure:

1. Following any incident where a student is involved, two incident report forms must be filled out by the student and clinical supervisor involved. A CRMC form as well as a site form needs to be completed. Copies of both forms are to be forwarded to the program director.
2. Students, who have been exposed to any hazardous substances, including blood or body fluids, will report this immediately as well as file incident reports with the program and clinical site.

Affirmative Action:

CRMC does not discriminate on the basis of sex, ethnicity, or handicap in the educational programs that it operates and is prohibited from discriminating in such a manner by law. All CRMC personnel and persons, vendors and organizations with whom the Hospital does business, are required to comply with all applicable federal and state statutes and regulations designed to promote affirmative action and equal opportunity.

Procedure:

1. Creating and sustaining a climate of equal opportunity is the responsibility of all those associated with the **CRMC Diagnostic Medical Sonography Program (General)** including students.
2. If indicated, a student should report any complaint related to education and equal opportunity to the program director.
3. Hospital's equal opportunity statements apply in clinical settings.

Confidentiality:

Policy:

Material contained in the student record will not be release to outside parties without the student's written consent for release in accordance with the Federal Privacy Act and the Family Educational Rights Act of 1974.

Information from patient records is highly confidential and is not to be discussed or passed on in any form for any purpose other than education.

Procedure:

1. Student academic and performance records are kept in a locked file in the Program Director's office. Students may review their own records with the program officials at any time.
2. Challenges to the student's record may be made only as to accuracy and not judgment, e.g. the accuracy of recording a grade but not the grade itself.
3. Program officials will provide only verification of attendance in the program to outside parties unless authorized by the student to do otherwise.
4. Any disclosure of confidential information regarding a patient, **including release of pathology or diagnosis to a patient**, could result in dismissal from the program.

Dress Code:

Policy:

Students accepted into the program must wear either solid navy blue scrubs with white shoes or business attire covered by a lab coat at all times during clinical assignments. Students may wear any appropriate clothes during didactic courses. Clinical interns are expected to serve as role models during Clinical Case Study Days.

The purpose of the dress code is to look professional in appearance at all times. ("Professional appearance" is at the discretion of the program director.)

Following is a list of "Don'ts." The list is based on clinical site expectations.

Do NOT wear:

1. Denim or fleece.
2. Loud stripes, prints, floral or neon colors.
3. Colored or patterned hose.
4. Sandals, open-toed shoes or athletic footwear with contrasting colors, brand names, large logos or stripes.
5. T-shirts, jeans, jean-styled slacks, denim, fleece.

6. Excessively high heels.
7. Short skirts, shorts, stirrup pants, and spandex.
8. Women may not wear more than one earring on each ear. Women may not wear earrings anywhere but their ears.
9. Large amounts of makeup, cologne, perfume, aftershave, or colored nail polish.
10. Women with long hairstyles must wear it tied back, and hair must not interfere with patient contact. Nails must be short.
11. Men must always be clean-shaven and mustaches, and beards must be neat and well trimmed.
12. Men must wear ties unless the clinical site instructs them not to do so.
13. Men's hair must be short and clean.
14. Men may not wear any earrings.
15. Men's business attire will include a dress shirt and tie. Pants must be of dress style (no jeans, denim or western styled pants). Footwear must also be of dress style. Cowboy boots and athletic footwear are not acceptable.
16. No gum chewing in clinical sites or during Clinical Case Study Days.

Procedure:

1. The program director, clinical coordinator or instructor is responsible for informing students if they are in conflict with the dress code.
2. Students who are not in compliance will be informed privately. They will be given one warning and may be asked to leave the clinical site. They may be sent home and asked to return more appropriately dressed.
3. Students who need more than one warning may be placed on probation.

Smoking:

Policy:

Smoking is prohibited in all medical facilities except in designated outside areas on the CRMC campus.

Procedure:

1. Compliance with all smoking rules is expected.
2. Failure to comply in clinical sites may result in being dismissed from the site.
3. Students also need to be mindful of the odors associated with smoking, and the impact this may have on patients.

Supervision:

Policy:

The In-house Coordinator or the Program Director assigned to the student provide general supervision of students in the second year of the program.

Procedure:

1. The clinical instructors will provide direct supervision of clinical performance in the clinical area. Staff sonographers may also provide direction.
2. Students will receive a minimum of two site visits per course level by the faculty member assigned to them. Students are expected to share any problems they are having at the time of these visits.

Student Work Policy:

Policy:

Students may be employed in a clinical or non-clinical setting outside regular education hours, provided work does not interfere with assigned clinical and academic responsibilities.

Procedure:

1. Students will not be allowed to be paid for work performed by direction or as part of the **CRMC Diagnostic Medical Sonography Program**
2. Students who choose to seek employment outside the program and do not maintain satisfactory academic and clinical grades may pay the consequences as outlined in the dismissal policy.

Grading:

Policy:

The program uses a standard 4-point grading scale. The program requires a minimum academic and clinical grade of 2.0 in each course. All courses will be given a letter grade.

Procedure:

1. Students are provided with opportunities to accumulate their grade through quizzes, midterm, and final examinations in each didactic course.
2. Students are provided a midterm and final grade in each clinical course.
3. Grades received on competencies do not directly add to the final grade.

4. A grade of less than a 2.0 in any course is considered a failing grade.
5. The cumulative grade point average must be 2.0 or higher each course level for students in the **CRMC Diagnostic Medical Sonography Program** to remain in the program.

Graduation:

Policy:

The hospital conducts graduation/pinning ceremonies for the **CRMC Diagnostic Medical Sonography Program**. Students are expected to participate in these exercises. The program assists the graduating class in conducting a pinning ceremony at the conclusion of the program.

Procedure:

1. Each student is encouraged and expected to attend the pinning ceremony.
2. Each student may invite a limited number of friends and relatives to the pinning ceremony.
3. The program director is responsible for the content of the pinning ceremony, however. Students may submit specific requests regarding speakers, music, food, etc.
4. Students must have completed all obligations in order to graduate. A resume must be on file, along with all successfully completed competencies.

Membership in Professional Organizations:

Policy:

Society membership (*SDMS) is required. Meetings sponsored by sonographic organizations are available locally, and attendance is also strongly encouraged. Faculty may require attendance if the subject matter is part of a course being taught. Students with faculty permission may also attend other meetings in the field of ultrasound.

*Society of Diagnostic Medical Sonography
2745 Dallas Pkwy, Ste. 350
Plano, TX 75093-8730
(214) 473-8057 or (800) 229-9506
(214) 473-8563 (fax)

Procedure:

1. Approval for meeting attendance requiring absence should be requested in a timely manner and at least two weeks prior to the scheduled meeting.
2. Faculty will post and provide driving directions to all local meetings showing topics and speakers.

Communicable Diseases:

Policy:

Students may need to be restricted from clinical work settings during the incubation period of a communicable disease and/or during a known period of communicability.

Procedure:

1. Students with a suspected diagnosis of the following diseases must report the infection to the program director. Confirmation and treatment if desired or recommendation will be required:

Chicken pox (required)	scabies/lice
Hepatitis-acute	tuberculosis
Measles (rubella)	

2. During a known period of communicability, students may not work in the clinical setting unless authorized to do so.
3. Students assigned to clinical settings may require restrictions if diagnosed or suspected of having the following communicable diseases:

Conjunctivitis	herpes zoster (shingles)
Hepatitis	herpes simplex (cold sores)
Influenza	skin infections
Herpes Whitlow (finger)	

4. Non-immune students who have been accepted into the program should notify the program director following exposure to any of the following communicable diseases:

Chicken pox	rubella
Mumps	herpes zoster
Hepatitis (acute)	measles

5. Any time missed due to illness or any nature is considered absence and will be handled according to time off policies established by the program.

Infectious Disease:

Policy:

All students must wear protective devices, gloves, gowns, masks, etc., when performing examinations on patients with infectious disease.

Blood and body secretions such as semen, saliva, urine, tears, stool, emesis, sputnum, wound drainage, bile, and pleural or peritoneal fluid may contain the HIV or hepatitis virus. All should be considered infectious. Any tissue, biopsy, or patient specimen should also be handled with care, including wearing gloves.

Procedure:

1. All students must review requisitions for evidence of information regarding necessary precautions.
2. All students will review precautions to be taken with a supervising sonographer before performing an examination on a patient with an infectious disease.
3. Any incidents involving blood or body fluid contamination should be reported to the clinical instructor, physician, and program officials.

Hepatitis B Vaccine:

Policy:

CRMC Diagnostic Medical Sonography Program (General) students are required to read “Bloodborne Facts”, “Hepatitis B Vaccine” and “Infectious Disease” policies included in this handbook.

Procedure:

1. All students will be required to either receive the hepatitis B vaccine or sign the declination.
2. Students will be required to sign the declination while they are receiving the vaccine until the 3rd shot is received and documents are in their file.
3. The Liability Release and Declination is attached. A copy will be provided to students during their orientation.
4. All students are strongly urged to take this vaccine to protect them during their clinical training.

Information About Hepatitis B Vaccine

The Disease: Hepatitis B is a viral infection caused by the hepatitis B virus (HBV), which causes death in 1-2% of patients. Most people with hepatitis B recover completely, but approximately 5-10% become chronic carriers of the virus. Most of these people have no symptoms, but can continue to transmit the disease to others. Some may develop chronic active hepatitis and cirrhosis. HBV also appears to be causative factor in the development of liver cancer.

The Vaccine: Hepatitis B vaccine is produced from the plasma of chronic HBV carriers. The vaccine consists of highly purified, formalin-inactivated hepatitis B antigen (viral coating material). It has been extensively tested for safety in chimpanzees and for safety and efficiency in large-scale clinical trials with human subjects. A high percentage of healthy people who receive two doses of vaccine and a booster achieve high levels of surface antibody (anti-HBs) and protection against Hepatitis B. Persons with immune-system abnormalities, such as dialysis patients, have less response to the vaccine/but over half of those receiving it do develop antibodies. Full immunization requires three doses of vaccine over a six-month period, although some persons may not develop immunity even after three doses. There is no evidence that the vaccine has ever caused hepatitis B. However, persons who have been infected with HBV prior to receiving the vaccine may go on to develop clinical hepatitis in spite of immunization. The duration of immunity is unknown at this time.

Possible Vaccine Side Effects: The incidence of side effects is very low. No serious side effects have been reported with the vaccine. A few persons experience tenderness and redness at the site of injection. Low-grade fever may occur. Rash, nausea, joint pain and mild fatigue have also been reported. The possibility exists that more serious side effects may be identified with more extensive use.

Community Regional Medical Center

Liability Release – Assumption of Risks Form

I have read the attached statement about hepatitis B and the hepatitis B vaccine. I have had an opportunity to ask questions and understand the benefits and risks of hepatitis B vaccination as well as the risks of not receiving the vaccination. I do not wish to receive the vaccination series at this time and voluntarily assume the risks inherent in not receiving the vaccine series and hereby further release Merced College, its officers, employees and agents from any and all liability, loss or damage that I may suffer or incur from whatever source in the event of any actual or potential exposure or infection due to my decision not to receive the vaccination.

Student Hepatitis B Vaccine Declination

I understand that due to my occupational exposure to blood or other potentially infectious materials. I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been advised of the importance of being vaccinated with hepatitis B vaccine from a licensed health care provider. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I want to be vaccinated with hepatitis B vaccine, I understand that I will need to receive the vaccination series from a license health care provider.

Printed Name of Student

Signature of Student, Parent/Guardian

Date

Signature of Witness

Date

COMMUNITY MEDICAL CENTERS
2823 Fresno Street, Fresno, CA 93721
ENROLLMENT AGREEMENT
January 13, 2011- July 14, 2012

Student Name _____ Phone _____

Address _____

Email address _____

PROGRAM

I hereby enroll at Fresno Community Hospital and Medical Center doing business as Community Medical Centers (CMC) at 2823 Fresno Street, Fresno, CA, in the Diagnostic Medical Sonography (DMS) program, beginning on January 13, 2011 (Session Start Date). The degree program is 18 months in length and my anticipated graduation date is July 12, 2012. I understand my enrollment is subject to acceptance by CMC and my graduation date is subject to change depending on my timely completion of all program requirements. Program requirements are contained in the Sonography Program materials which I acknowledge having received.

Upon successful completion of the DMS program I will receive a Certificate of Completion from CMC and will be eligible to take the national ARDMS (American Registry of Diagnostic Medical Sonographers) specialty examinations for either RDMS credentials in abdominal and obstetrics/gynecology sonography or RDCS credentials in adult echocardiography, depending upon the course of instruction I have selected.

CAREER PLACEMENT

I acknowledge that no representative of CMC has guaranteed me placement upon graduation.

TUITION AND FEES

I am responsible for the following tuition and fees pertaining to the program's required course of study completed during the designated enrollment period. Fees must be paid in accordance with the schedule set forth below. **I understand that I am solely responsible to purchase the required textbooks for each course of study, which is over and above the charges listed below.**

The following charges are estimates and are subject to change.

Application Fee	\$50.00	Must accompany application
Tuition	\$14,950.00	Must be paid in accordance with the schedule below
STRF Fee	\$37.50	<u>MUST BE PAID ON OR BEFORE THE FIRST DAY OF CLASS (NONREFUNDABLE) DUE UPON ENROLLMENT</u>

PAYMENT

The payment of tuition and fees is due and must be paid as follows:

First Payment	\$3,200.00	<u>MUST BE PAID ON OR BEFORE THE FIRST DAY OF CLASS (DUE UPON ENROLLMENT)</u>
Second Payment	\$3,200.00	Payable on or before the beginning of the fifth (5 th) month of class
Third Payment	\$8,550.00	Payable on or before the beginning of the tenth (10 th) month of class
TOTAL	\$15,037.50	

FINANCIAL ASSISTANCE

I am responsible for payment of the full amount of tuition and fees charged by Community Medical Centers. No financial assistance is available.

NO PENALTY CHARGES

If I fail to make timely payment of my scheduled tuition and fees on or before the close of business on the date due, I will be immediately disenrolled and there will be no penalty charges assessed against me.

CHANGE IN NAME, ADDRESS, E-MAIL ADDRESS, OR PHONE NUMBER

I am responsible for informing the CMC instructor of any changes in my name, address, email address, or phone number within thirty (30) days of any such change.

REFUND POLICIES

State of California Student Tuition Recovery Fund (STRF)

You must pay the state-imposed assessment for the Student Tuition Recovery Fund (STRF) if all of the following applies to you:

1. You are a student in an educational program, who is a California resident, or are enrolled in a residency program, and prepay all of part of your tuition either by cash, guaranteed student loans, or personal loans, and
2. Your total charges are not paid by any third-party payer such as an employer, government program or other payer unless you have a separate agreement to repay the third party.

You are not eligible for protection from the STRF and you are not required to pay the STRF assessment if either of the following applies:

1. You are not a California resident, or are not enrolled in a residency program, or
2. Your total charges are paid by a third party, such as an employer, government program or other payer, and you have no separate agreement to repay the third party.

It is a state requirement that a student who is a resident of California, who pays his or her own tuition, either directly or through a loan, pay a state imposed fee for the Student Recovery Fund. Although it is based on the actual amount of total tuition cost (regardless of the portion that is prepaid), it is charged on a calendar year basis. Please refer to the Schedule of Tuition and Fees set forth above. These fees support the Student Tuition Recovery Fund (STRF), a special fund established by the California State Legislature to reimburse students who might otherwise experience a financial loss as a result of (a) the closure of the institution, (b) the institution's breach or anticipatory breach of the agreement for the course of instruction, or (c) a decline in the quality or value of the course of instruction within the 30-day period before the institution's closure. If you are not a resident of California, you are not eligible for protection under or recovery from the Student Tuition Recovery Fund. Participation is mandatory for California residents.

It is important that enrollees keep a copy of any enrollment agreement, contract, or application to document enrollment, tuition receipts or canceled checks to document the total amount of tuition paid. Such information may substantiate a claim for reimbursement from the STRF, which must be filed within one year of the Bureau's notice to the student of their rights under the STRF, or if no notice of rights is served to the student, within four years of institution's closure. For further information or instructions contact the Bureau for Private Postsecondary and Vocational Education, 400 R. Street, Suite 5000, Sacramento, CA 95814, (916) 445-3427.

STUDENT'S RIGHT TO CANCEL

I understand that I may cancel this Enrollment Agreement and obtain a refund of charges paid through attendance at the first class session, or the seventh day after enrollment, whichever is later, and receive a refund of all fees paid (minus the application fee). Upon expiration of this cancellation period, all fees paid are subject to the refund policies outlined in this agreement.

California Resident Student Refund Policy

If the student wishes to withdraw from the program they are to notify the program director of their wish to cancel the enrollment agreement or to withdraw from the institution and obtain a refund. The following procedure will apply to obtain a refund of tuition:

A student who withdraws from the CMC DMS Program will receive a refund of tuition, if one is due, within 30 days following the student's withdrawal. In the event that a student does not begin classes, all monies paid for tuition and fees, with the exception of the \$50 application fee, are refundable. In addition, the student may withdraw from the program after instruction has started, and may be entitled to a refund if the student has completed 60% or less of the term of instruction. The following formula will be used to determine the amount of refund to the student: $(\text{term tuition} \div \text{term hours}) \times \text{term hours attended} = \text{the amount owed by the student}$. The refund will be the amount in excess paid by the student.

If the student has received federal student financial aid funds, the student is entitled to a refund of monies not paid from federal student financial aid program funds.

Fees will be refunded according to the refund percentage. An administrative fee of \$100 will be assessed to any student who withdraws or goes on leave from the institution on or after the first day of the semester. Refunds are made within 30 days of the withdrawal date.

ARBITRATION

You and CMC agree that any dispute or claim between you and CMC (or any company affiliated with CMC, or any of its officers, directors, trustees, employees or agents) arising out of or relating to this enrollment agreement or, absent such agreement, your enrollment or attendance at CMC, whether such dispute arises before, during, or after your attendance and whether the dispute is based on contract, tort, statute, or otherwise, shall be, at your or CMC's election, submitted to and resolved by individual binding arbitration pursuant to the terms described herein.

If you decide to initiate arbitration, you may select an arbitrator from the American Arbitration Association to serve as the arbitration administrator pursuant to its rules of procedure. If CMC intends to initiate arbitration, it will notify you in writing by regular mail at your latest address on file with CMC, and you will have 20 days from the date of the letter to select one of these organizations as the administrator. If you fail to select an administrator within that 20-day period, CMC will select one.

CMC agrees that it will not elect to arbitrate any individual claim of less than \$5,000 that you bring in small claims court (or in a similar court of limited jurisdiction subject to expedited procedures). If that claim is transferred or appealed to a different court, however, or if your claim exceeds \$5,000, CMC reserves the right to elect arbitration and, if it does so, you agree that the matter will be resolved by binding arbitration pursuant to the terms of this Section.

IF EITHER YOU OR CMC CHOOSES ARBITRATION, NEITHER PARTY WILL HAVE THE RIGHT TO A JURY TRIAL, TO ENGAGE IN DISCOVERY, EXCEPT AS PROVIDED IN THE APPLICABLE ARBITRATION RULES, OR OTHERWISE TO LITIGATE THE DISPUTE OR CLAIM IN ANY COURT (OTHER THAN IN SMALL CLAIMS OR SIMILAR COURT, AS SET FORTH IN THE PRECEDING PARAGRAPH, OR IN AN ACTION TO ENFORCE THE ARBITRATOR'S AWARD). FURTHER, YOU WILL NOT HAVE THE RIGHT TO PARTICIPATE

AS A REPRESENTATIVE OR MEMBER OF ANY CLASS OF CLAIMANTS PERTAINING TO ANY CLAIM SUBJECT TO ARBITRATION. THE ARBITRATOR'S DECISION WILL BE FINAL AND BINDING. OTHER RIGHTS THAT YOU OR CMC WOULD HAVE IN COURT ALSO MAY NOT BE AVAILABLE IN ARBITRATION.

The arbitrator shall have no authority to arbitrate claims on a class action basis, and claims brought by or against you may not be joined or consolidated with claims brought by or against any other person. Any arbitration hearing shall take place in the federal judicial district in which you reside. Upon your written request, CMC will pay the filing fees charged by the arbitration administrator, up to a maximum of \$3,500 per claim. Each party will bear the expense of its own attorneys, experts and witnesses, regardless of which party prevails, unless applicable law or this Agreement gives a right to recover any of those fees from the other party. If the arbitrator determines that any claim or defense is frivolous or wrongfully intended to oppress the other party, the arbitrator may award sanctions in the form of fees and expenses reasonably incurred by the other party (including arbitration administration fees, arbitrators' fees, and attorney, expert and witness fees), to the extent such fees and expenses could be imposed under Rule 11 of the Federal Rules of Civil Procedure.

The Federal Arbitration Act ("FAA"), 9 U.S.C. §§ 1, *et seq.*, shall govern this arbitration provision. This arbitration provision shall survive the termination of your relationship with CMC. If you have a question about the arbitration administrators mentioned above, you can contact them as follows: American Arbitration Association, 6795 N. Palm Ave. # 200, Fresno, CA 93704-1088, (559) 490-1900.

Any holder of this consumer credit contract is subject to all claims and defenses which the debtor could assert against the seller of good and services obtained pursuant hereto or with the proceeds hereof. Recovery hereunder by the debtor shall not exceed amounts paid by the debtor. (FTC Rule effective 5-14-76).

ACKNOWLEDGMENT OF RECEIPT OF DOCUMENTS

Prior to signing this enrollment agreement, you must be given a catalog or brochure and a School Performance Fact Sheet, which you are encouraged to review prior to signing this agreement. These documents contain important policies and performance data for this institution. This institution is required to have you sign and date the information included in the School Performance Fact Sheet relating to completion rates, placement rates, license examination passage rates, and salaries or wages, prior to signing this agreement.

I certify that I have received the catalog, School Performance Fact Sheet, and information regarding completion rates, placement rates, license examination passage rates, and salary or wage information included in the School Performance Fact sheet, and have signed, initialed, and dated the information provided in the School Performance Fact Sheet.

ACKNOWLEDGEMENT OF READING OF AGREEMENT

By signing this agreement, I acknowledge that I have read this agreement thoroughly, have received my copy and agree to be bound by it. I agree to abide by the rules and regulations described in the portion of the Employee Handbook of CMC designated as the Student Handbook, although I acknowledge I am not an employee of CMC. CMC may, at its sole option, refuse to accept any modification of this agreement as set forth herein, and specifically disclaims any guarantee or understanding, oral or written, that I will be allowed to modify this agreement at any time. I understand that the refund policy is subject to change in accordance with Federal and State regulations and institutional policies.

CALIFORNIA BUREAU FOR PRIVATE POSTSECONDARY EDUCATION

Any questions a student may have regarding this enrollment agreement that have not been satisfactorily answered by the institution may be directed to the Bureau for Private Postsecondary Education at P.O. Box 980818, West Sacramento, CA (95798-0818), 2535 Capitol Oaks Drive, Suite 400, Sacramento, CA 95833, (Internet Web site address <http://www.bppe.ca.gov>), (Telephone: Area Code 888-370-7589).

A student or any member of the public may file a complaint about this institution with the Bureau for Private Postsecondary Education by calling (toll free telephone number 888-370-7589) or by completing

a complaint form, which can be obtained on the bureau's Internet Web site (Internet Web site <http://www.bppe.ca.gov>).

STUDENT PERFORMANCE FACT SHEET

I certify that I have completed, signed and dated the Student Performance Fact Sheet required by Section 94910 of the California Private Postsecondary Education Act of 2009.

TRANSFERABILITY

NOTICE CONCERNING TRANSFERABILITY OF CREDITS AND CREDENTIALS EARNED AT OUR INSTITUTION

The transferability of credits you earn at CMC is at the complete discretion of an institution to which you may seek to transfer. Acceptance of certificate you earn in CMC is also at the complete discretion of the institution to which you may seek to transfer. If the credits or certificate that you earn at this institution are not accepted at the institution to which you seek to transfer, you may be required to repeat some or all of your coursework at that institution. For this reason you should make certain that your attendance at this institution will meet your educational goals. This may include contacting an institution to which you may seek to transfer after attending CMC to determine if your credits certificate will transfer.

EFFECTIVE DATE OF ENROLLMENT AGREEMENT

LOANS

In the event the student obtains a loan to pay for an educational program, the student will have the responsibility to repay the full amount of the loan plus interest, less the amount of any refund.

If the student is eligible for a loan guaranteed by the federal or state government and the student defaults on the loan, both of the following may occur:

- The federal or state government or a loan guarantee agency may take action against the student, including applying any income tax refund to which the student is entitled to reduce the balance owed on the loan.
- The student may not be eligible for any other federal student financial aid at another institution or other government assistance until the loan is repaid.

Prior to signing this enrollment agreement, you must be given a catalog or brochure and a School Performance Fact Sheet, which you are encouraged to review prior to signing this agreement. These documents contain important policies and performance data for this institution. This institution is required to have you sign and date the information included in the School Performance Fact Sheet relating to completion rates, placement rates, license examination passage rates, and salaries or wages, prior to signing this agreement."

initial_____ "I certify that I have received the catalog, School Performance Fact Sheet, and information regarding completion rates, placement rates, license examination passage rates, and salary or wage information included in the School Performance Fact sheet, and have signed, initialed, and dated the information provided in the School Performance Fact Sheet."

STATEMENT OF CHARGES

I understand that I am solely responsible to purchase the required textbooks for each course of study, which is over and above the charges listed below.

<u>Application Fee</u>	<u>\$50.00</u>	<u>Must accompany application</u>
<u>STRF Fee</u>	<u>\$37.50</u>	<u>MUST BE PAID ON OR BEFORE THE FIRST DAY OF CLASS (NONREFUNDABLE) UPON ENROLLMENT</u>
<u>First Payment</u>	<u>\$3,200.00</u>	<u>MUST BE PAID ON OR BEFORE THE FIRST DAY OF CLASS (UPON ENROLLMENT)</u>
<u>Second Payment</u>	<u>\$3,200.00</u>	<u>PAYABLE ON OR BEFORE THE BEGINNING OF THE FIFTH MONTH OF CLASS</u>
<u>Third Payment</u>	<u>\$8,550.00</u>	<u>PAYABLE ON OR BEFORE THE BEGINNING OF THE FIFTH MONTH OF CLASS</u>
<u>TOTAL CHARGES</u>	<u>\$15,037.50</u>	

<u>ESTIMATED DUE FOR THE ENTIRE PROGRAM</u>	<u>\$15,037.50</u>
<u>TOTAL CHARGES FOR CURRENT PERIOD OF ATTENDANCE</u>	<u>\$11,800.00</u>
<u>CHARGES DUE UPON ENROLLMENT</u>	<u>\$3,237.50</u>

I UNDERSTAND THAT THIS IS A LEGALLY BINDING CONTRACT WHEN SIGNED BY THE STUDENT AND ACCEPTED BY THE INSTITUTION. MY SIGNATURE BELOW CERTIFIES THAT I HAVE READ, UNDERSTOOD, AND AGREED TO MY RIGHTS AND RESPONSIBILITIES, AND THAT THE INSTITUTION'S CANCELLATION AND REFUND POLICIES HAVE BEEN CLEARLY EXPLAINED TO ME.

Student Signature

Date

Admission's Representative Signature

Date

Accepting School Official (Non-admissions) Signature

Date

GENERAL CLASS SCHEDULE

	Start	End	Times	Day(s)	Lec. Hrs.	Lab Hrs.
1st Course Level - 9 Weeks						
Basic Ultrasound Physics	1/18/2011	3/15/2011	5p - 10p	Tuesday	18	27
Introduction to Sonography	1/20/2011	3/17/2011	5p - 10p	Thursday	18	27
February 21, 2011 - President's Day						
Course Level break March 21 - 25, 2011						
2nd Course Level - 18 Weeks						
Abdominal Sonography	3/29/2011	8/2/2011	5p - 10p	Tuesday	36	36
Beginning Clinical Experience I	3/28/2011	8/5/2011	8a - 3:30p	M - TH		504
April 18 - 22 - Spring Break; May 30 - Memorial Day; July 4, 2011 - Independence Day						
Course Level break August 8 - 12, 2011						
3rd Course Level - 18 Weeks						
Obstetrics and Gynecology	8/16/2011	12/13/2011	5p - 10p	Tuesday	36	36
Beginning Clinical Experience II	8/15/2011	12/16/2011	8a - 3:30p	M - TH		504
November 11 - Veterans Day; Thanksgiving break November 24 & 25, 2011						
Course Level break December 19 - 23, 2011						
4th Course Level - 9 Weeks						
Advanced Ultrasound Physics	12/27/2011	2/21/2012	5p - 8p	Tuesday	27	
Advanced Clinical Experience I	12/27/2011	2/24/2012	8a - 3:30p	M - TH		252
Superficial Structures	12/29/2011	2/23/2012	5p - 9p	Thursday	9	27
December 26, 2011 - Christmas observed; January 2, 2012 - New Year's Day observed; February 20, 2012 - President's Day						
Course Level break February 27 - March 2, 2012						
5th Course Level - 18 Weeks						
Integrative Study in Sonography	3/6/2012	7/10/2012	5p - 7p	Tuesday	36	
Advanced Clinical Experience II	3/5/2012	7/13/2012	8a - 3:30p	M - TH		504
Basics of Vascular Sonography	3/8/2012	7/12/2012	5p - 8p	Thursday	27	27
April 2 - 6 - Spring Break; May 28 - Memorial Day; July 4, 2012 - Independence Day						
Any clinical hours missed due to a holiday will be made up by arrangement.						
There is a 30 minute lunch included for all clinical days assigned.						

Basic Ultrasound Physics (Course Level 1) 9 weeks

Course Description

This course covers basic principles and terminology of diagnostic ultrasound physics to include: a review of mathematical skills, transducers, beam dynamics and instrumentation. Hands-on instruction will be provided to introduce the student to necessary elementary skills in scanning as it pertains to the physical nature of ultrasound.

Course Content Outline

TOPICS	
I.	Introduction to Ultrasound and Elementary Principles A. Nature of ultrasound/definition of sound B. Frequency, wavelength, propagation speed C. Properties of ultrasound waves D. Review of mathematical units
II.	Propagation of Ultrasound Through Tissues A. Speed of sound in tissues B. Reflection C. Refraction D. Attenuation
III.	Image Features and Artifacts A. Definition of artifacts B. Reverberation, refraction C. Shadowing and enhancement D. Review artifacts on images

Student Outcomes

At the end of this course, the student should be able to:

- A. Demonstrate knowledge of basic acoustical physics and ultrasound instrumentation
- B. Employ a basic understanding of the propagation of ultrasound through tissues
- C. Select the appropriate techniques for performed examinations
- D. Adjust instrument controls to optimize image quality
- E. Evaluate and compensate for acoustical artifacts
- F. Prepare hard copy documentation of examination findings
- G. Perform linear area, circumference and other related measurements from sonographic images

Course Description

This course is an overview of diagnostic medical sonography (DMS) and its role in health care delivery. Students will be oriented to the academic and administrative structure of the program, clinical affiliates, and to the profession as a whole. Ethical and legal responsibilities of the professional relative to health care delivery will be addressed. An introduction to the principles, instruments, and routine sonographic procedures will be emphasized. The laboratory portion of this course will include a hands-on orientation to the computerized equipment and instrumentation. An orientation in the use of the library and library materials will also be presented.

Course Content Outline

TOPICS	
I.	Introduction to the Diagnostic Sonography Program A. General information B. Clinical education centers C. Duties/responsibilities of the student sonographer
II.	Professional Organizations A. Purpose, functions and activities B. National C. State
III.	Professional Development A. Career mobility B. Career advancement C. Continuing education
IV.	History A. Ultrasound
V.	Hospital Organization A. Health care delivery system B. Hospital Information System (HIS) 1. Accessing information 2. Data bases C. Radiology Information System (RIS) – computer applications - DICOM D. Ultrasound Department
VI.	Medical Terminology A. Sonographic medical terminology
VII.	The Sonographer and Patient Communication A. Professional ethics B. Patient's legal rights C. Confidentiality & privacy issues and patient computer records
VIII.	General Patient & Operator Care A. Body mechanics, moving and transferring patients
IX.	Exploring the Library A. Orientation to the library B. Availability of library/program reference material C. Understanding the differences between information and knowledge
X.	Basic operation and function of a computer and the ultrasound machine

Student Outcomes

At the end of this course, the student should be able to:

- A. Use proper medical terminology specific to the sonography environment
- B. Analyze the various program policies and provide a rationale for their existence
- C. Diagram the major duties/responsibilities of a student sonographer
- D. Compare and contrast the functions of the various components of the health care system and their relationship with the sonography department
- E. Relate purposes, functions and activities of the national professional organization
- F. Compare and contrast the various career advancement opportunities available to the sonographer
- G. Utilize and understand the basic operation and function of an ultrasound machine
- H. Select and demonstrate proper principles of body mechanics applicable to patient care and employee well-being
- I. Name & describe the typical digital computer components and their functions
- J. Describe common computer applications and related social and ethical problems/impact
- K. Learn fundamental operation and concepts of word processing, spreadsheet, and/or database software applications
- L. Understand the difference between information and knowledge
- M. Understand the links among information centers and the access points available through technology and reference sources
- N. Understand the basic structure of electronic databases and the strategies used to access them

Abdominal Sonography (Course Level 2) 18 weeks

Course Description

This course covers abdominal sonographic positioning and scanning protocol; related anatomy and physiology to include the retroperitoneum; pathology and clinical symptomology and how they relate to the sonographic appearance of these structures. Interpretation and critique of normal and abnormal anatomy with correlation of clinical, didactic and image information will be presented. The laboratory component of this course will include demonstration and scanning exercises to provide a “live lab” experience in conducting abdominal sonographic procedures.

Course Content Outline

TOPICS	
I.	Liver A. Anatomy B. Normal/pathology C. Technique
II.	Biliary Tree A. Anatomy B. Indications C. Technique
III.	Pancreas A. Anatomy B. Lab values C. Technique
IV.	Spleen A. Anatomy B. Diffuse disease C. Technique
V.	Urinary Tract A. Anatomy B. Lab values C. Obstructive uropathy D. Transplants E. Technique
VI.	Retroperitoneum A. Anatomy B. Great vessels C. Adenopathy and masses D. Technique
VII.	G.I. Tract A. Anatomy B. Technique
VIII.	Miscellaneous A. Abscesses and other fluid collections B. Noncardiac chest C. Invasive procedures

Student Outcomes

At the end of this course, the student should be able to:

- A. Demonstrate the ability to perform a sonographic examination of the abdomen
- B. Conduct sonography examinations with proper utilization of real-time equipment for abdominal scanning
- C. Differentiate and identify the sonographic appearance of normal abdominal anatomic structures
- D. Differentiate and document abnormal sonographic diseases processes, pathology, and pathophysiology of abdominal structures
- E. Modify the scanning protocol based on the sonographic findings and differential diagnosis

Beginning Clinical Experience I (Course Level 2) 18 weeks

Course Description

This course provides clinical experience for application of theoretical principles and concepts covered in previous and current didactic coursework. Clinical experience in patient care and handling, scanning techniques, instrumentation, work efficiency and image evaluation for abdominal imaging is provided.

Course Content Outline

TOPICS	
I.	Orientation to Ultrasound Department <ul style="list-style-type: none">A. Departmental policies and proceduresB. Patient transportation procedures to and from departmentC. Computer operation of departmental application softwareD. Instrumentation of ultrasound equipmentE. Location of equipment and suppliesF. Hospital personnel
II.	Evaluation of Ultrasound Orders <ul style="list-style-type: none">A. Patient identificationB. Verification of procedure(s) orderedC. Exam protocol & procedures
III.	Establishing Patient Rapport <ul style="list-style-type: none">A. Patient status evaluation<ul style="list-style-type: none">Cooperative/uncooperativeTrauma3. GeriatricB. Explaining procedures
IV.	Patient Preparation <ul style="list-style-type: none">A. DisrobingB. Patient exam preparation
V.	Room Preparation <ul style="list-style-type: none">A. Appearance/cleanlinessB. Equipment/supplies
VI.	Interaction with Radiologist <ul style="list-style-type: none">A. Exam presentation
VII.	Core Competencies in Abdominal Sonography <ul style="list-style-type: none">A. Exam<ul style="list-style-type: none">1. Scanning technique2. Positioning skills3. Equipment manipulation4. Image acquisition/critique5. Potential Artifacts6. Patient interaction/preparation7. Image orientation and identification

Student Outcomes

Upon completion of the course, the student should be able to independently execute with minimal assistance, a normal complete abdominal examination to include liver, biliary tree, pancreas, spleen, kidneys, and aorta.

At the end of the course, the student will be able to:

- A. Select proper patient's positions
- B. Prepare the equipment and accessory devices set-ups properly
- C. Select the appropriate technical factors
- D. Generate proper anatomical evaluations of ultrasound images
- E. Select the proper technical factor adjustments to produce diagnostic images
- F. Demonstrate the proper identification of images

Course Description

This course presents a review of anatomy and physiology of the gravid and nongravid pelvis. Techniques of transabdominal and transvaginal preparation are introduced. Symptomology of the female patient with correlation to sonographic appearance of pathology are covered. First, second and third trimester obstetrical assessment are covered in depth.

Course Content Outline

TOPICS	
I.	Female Pelvis A. Normal/abdominal B. Physiology C. Techniques 1. Transabdominal 2. Transvaginal
II.	Gynecology A. General descriptive terms B. Uterine masses C. Ovarian masses
III.	First Trimester Obstetrical Ultrasound A. Normal gestational sac/embryo B. Assessment of gestational age/maturity C. Lab values D. Pregnancy failures E. Ectopic pregnancies
IV.	Second and Third Trimester Obstetrical Ultrasound A. Normal fetus B. Multiple pregnancies C. Placenta 1. normal anatomy/position 2. developmental changes 3. previa/abruption D. Amniotic Fluid Volume E. Fetal anomalies F. Maternal disease G. Fetal death

Student Outcomes

At the end of this course, the student should be able to:

- A. Demonstrate the ability to perform obstetric and gynecologic sonographic examinations
- B. Demonstrate the ability to utilize real-time equipment for transabdominal and endocavitary obstetric and gynecologic scanning
- C. Differentiate sonographic appearance of normal anatomic structures of the female pelvic, including anatomical variants
- D. Differentiate, identify and document abnormal sonographic disease processes, pathology, and pathophysiology of the female pelvic structures
- E. Discriminate between the appearance of normal maternal, embryonic and fetal anatomic structures during the first, second and third trimesters
- F. Discriminate and appropriately document the sonographic appearance of obstetric abnormalities, diseases, pathology and pathophysiology
- G. Demonstrate knowledge and understanding of the role of the sonographer in performing invasive procedures
- H. Adapt the scanning protocol based on the sonographic findings and differential diagnosis
- I. Create diagnostic images by utilizing given standards of acceptance
- J. Critique the quality of sonographic images by utilizing given department standards

Course Description

This course provides clinical experience for application of theoretical principles and concepts covered in previous and current didactic coursework. Clinical experience in patient care and handling, scanning techniques, instrumentation, work efficiency and image evaluation for obstetric and gynecological imaging, in addition to abdominal imaging is provided.

Course Content Outline

TOPICS
<p>I. Orientation to Ultrasound Department</p> <ul style="list-style-type: none"> a. Departmental policies and procedures b. Patient transportation procedures to and from department c. Computer operation of departmental application software d. Instrumentation of ultrasound equipment e. Location of equipment and supplies f. Hospital personnel
<p>II. Evaluation of Ultrasound Orders</p> <ul style="list-style-type: none"> a. Patient identification b. Verification of procedure(s) ordered c. Exam protocol & procedures
<p>III. Establishing Patient Rapport</p> <ul style="list-style-type: none"> a. Patient status evaluation <ul style="list-style-type: none"> i. Cooperative/uncooperative ii. Trauma iii. Geriatric b. Explaining procedures
<p>IV. Patient Preparation</p> <ul style="list-style-type: none"> a. Disrobing b. Patient exam preparation
<p>V. Room Preparation</p> <ul style="list-style-type: none"> a. Appearance/cleanliness b. Equipment/supplies
<p>VI. Interaction with Radiologist</p> <ul style="list-style-type: none"> a. Exam presentation
<p>VII. Core Competencies in Abdominal Sonography</p> <ul style="list-style-type: none"> a. Exam <ul style="list-style-type: none"> i. Scanning technique ii. Positioning skills iii. Equipment manipulation iv. Image acquisition/critique v. Potential Artifacts vi. Patient interaction/preparation vii. Image orientation and identification

Student Outcomes

Upon completion of the course, the student should be able to independently execute with minimal assistance, a normal complete gynecological and obstetrical examination to include transabdominal and endocavitary technique.

The competency criteria used to evaluate the student will ensure that the student will be able to:

- A. Assess proper patient preparation of the female pelvis
- B. Select proper patient positions
- C. Prepare the equipment set-up and accessory devices properly
- D. Select the appropriate technical factors
- E. Generate proper anatomical evaluations of ultrasound images
- F. Select the proper technical factor adjustments to produce diagnostic images
- G. Demonstrate the proper identification of images

Course Description

This course is a continuation of basic physics and instrumentation including continuous and pulsed wave Doppler. Basic principles of color flow imaging, advanced principles in medical ultrasound instrumentation, hemodynamics, bioeffects, artifacts, and sonographic quality control procedures are also covered.

Course Content Outline

TOPICS	
A.	Physical Principles of Doppler A. Doppler equation B. Doppler effect
II.	Instrumentation A. Continuous wave and pulsed Doppler 1. Differences 2. Advantages and disadvantages of each B. Duplex Instruments C. Spectral Analysis D. Basic of Color Flow Imaging 1. Advantages and limitations 2. Artifacts D. Power Doppler E. Tissue
III.	Quality Assurance of Ultrasound Instruments A. General Concepts B. Parameters to be evaluated C. Preventative maintenance D. Record keeping
IV.	Bioeffects and safety A. Bioeffects 1. dosimetric quantities 2. acoustic exposure 3. intensity B. Experimental Biological Effects Studies C. In Vitro Studies D. Epidemiological Studies E. AIUM Statements

Student Outcomes

At the end of this course, the student should be able to:

- A. Employ a basic understanding of the physical principles of the Doppler equation
- B. Select the appropriate techniques for performing Doppler examinations
- C. Adjust instrument controls to optimize image quality
- D. Evaluate and compensate for acoustical Doppler artifacts
- E. Prepare hard copy documentation of examination findings
- F. Demonstrate knowledge and understanding of the interaction between ultrasound and tissue and the probability of biological effects
- G. Distinguish between normal and abnormal continuous wave, pulse Doppler and basic color flow Doppler
- H. Assess the basic parameters of quality assurance of ultrasound instruments

Advanced Clinical Experience I (Course Level 4) 9 weeks

Course Description

This course provides clinical experience for application of theoretical principles and concepts covered in previous and current didactic coursework. Clinical experience in patient care and handling, scanning techniques, instrumentation, work efficiency and image evaluation for superficial structures is provided. Clinical experience in abdominal, obstetric and gynecological imaging is also provided.

Course Content Outline

TOPICS	
I.	Orientation to Ultrasound Department <ul style="list-style-type: none">A. Departmental policies and proceduresB. Patient transportation procedures to and from departmentC. Computer operation of departmental application softwareD. Instrumentation of ultrasound equipmentE. Location of equipment and suppliesF. Hospital personnel
II.	Evaluation of Ultrasound Orders <ul style="list-style-type: none">A. Patient identificationB. Verification of procedure(s) orderedC. Exam protocol & procedures
III.	Establishing Patient Rapport <ul style="list-style-type: none">A. Patient status evaluation<ul style="list-style-type: none">1. Cooperative/uncooperative2. Trauma3. GeriatricB. Explaining procedures
IV.	Patient Preparation <ul style="list-style-type: none">A. DisrobingB. Patient exam preparation
V.	Room Preparation <ul style="list-style-type: none">A. Appearance/cleanlinessB. Equipment/supplies
VI.	Interaction with Radiologist <ul style="list-style-type: none">A. Exam presentation
VII.	Core Competencies in Superficial Structures Sonography <ul style="list-style-type: none">A. Exam<ul style="list-style-type: none">1. Scanning technique2. Positioning skills3. Equipment manipulation4. Image acquisition/critique5. Potential Artifacts6. Patient interaction/preparation7. Image orientation and identification

Student Outcomes

Upon completion of the course, the student should be able to independently execute with minimal assistance, normal complete examinations of the superficial structures to include thyroid, breast, testicular, and soft tissues sonographic examinations.

The competency criteria used to evaluate the student will ensure that the student will be able to:

- A. Select proper patient's positions
- B. Prepare the equipment and accessory devices set-ups properly
- C. Set up and complete invasive procedures
- D. Select the appropriate technical factors
- E. Generate proper anatomical evaluations of ultrasound images
- F. Select the proper technical factor adjustments to produce diagnostic images
- G. Demonstrate the proper identification of images

Superficial Structures 9 weeks

1. **Course Title/Level:** Superficial Structures (Course Level 4)
2. **Hours:** 9 hours Lecture; 27 hours Lab
3. **Limitations on Enrollment:** Enrollment in the CRMC Diagnostic Medical Sonography Program (General)
4. **Description:** This course covers basic positioning and scanning protocol of the superficial structures; related anatomy and physiology to include the neck, breast, and testes; pathology and clinical symptomology and how they relate to the sonographic appearance of these structures. Interpretation and critique of normal and abnormal anatomy with correlation of clinical didactic and image information will be presented. The laboratory component of this course will include demonstration and scanning exercises to provide a “live lab” experience in conducting superficial structure procedures.
5. **Required Textbook(s)**
Textbook of Diagnostic Ultrasonography, 6th ed.; Hagen-Ansert; Mosby
6. **Entrance Skills:** Before entering the course the student should have successfully mastered all previous program coursework.
7. **Student Outcomes:**
At the end of this course, the student should be able to:
 - A. Demonstrate the ability to perform sonographic examinations of superficial structures
 - B. Utilize real-time equipment for imaging superficial structures
 - C. Differentiate and identify the sonographic appearance of normal anatomic superficial structures
 - D. Differentiate and document abnormal sonographic disease processes, pathology, and pathophysiology of superficial structures
 - E. Demonstrate knowledge and understanding of the role of the sonographer in performing invasive procedures
 - F. Modify the scanning protocol based on the sonographic findings and differential diagnosis
 - G. Create diagnostic images by utilizing given standards of acceptance
 - H. Critique the quality of sonographic images by utilizing given department standards
- 8a. **Course Content and Scope:**
 - A. **Course Content, in outline form (attach on separate sheet)**
 - B. **Required Readings:**
Two chapters of approximately 20 pages each per week.
One reference reading of approximately 5 pages per week.
 - C. **Required Writing Assignments:**
Two to four laboratory exercises per week
Two written homework assignments
Essay examination questions
 - D. **Learning Activities Required Outside of Class:**
Reading assignments
Written homework assignments

- E. **Assignments or Activities that Demonstrate Critical Thinking:**
Assessment of the patient's condition and determination of the appropriate approach to produce quality sonographic images of the superficial structures according to the textbook
Organization of the flow of the examination procedures to minimize patient discomfort and maximize efficiency
Demonstration of proper film identification

8b. **Lab Content and Scope:**
Lab is integrated with the lecture content.

9. **Methods of Instruction:**
Lecture and discussion
Written assignments
Demonstration
Laboratory practice

10. **Methods of Evaluation:**
Utilizing the percentage scale given, cumulative points for assignments, laboratory exercises, quizzes and tests will determine the final grade.

Course Description

This course covers a comprehensive analysis and assessment of all previous diagnostic medical sonography instructional coursework in preparation for writing the national registry examination. Job market readiness skills will also be presented.

Course Content Outline

TOPICS	
I.	Ultrasound Physics and Instrumentation
II.	Abdominal
III.	Obstetrics
IV.	Gynecology
IV.	Basic Vascular Anatomy
V.	Basic Vascular Sonographic Procedures
VI.	Employment Preparation

Student Outcomes

Upon completion of the course, the student should be able to

- A. Analyze academic strengths and weakness and determine corrective measures necessary in order to achieve a passing score on a pre-registry written examination
- B. Prepare one job resume and cover letter
- C. Evaluate the various job opening listed and formulate and plan for obtaining employment

Course Description

This course provides clinical experience for application of theoretical principles and concepts covered in previous and current didactic coursework. Clinical experience in patient care and handling, scanning techniques, instrumentation, work efficiency and image evaluation of basic vascular sonography is provided. Clinical experience in abdominal, obstetric and gynecological, and superficial structures imaging is also provided.

Course Content Outline

TOPICS	
A.	Orientation to Ultrasound Department <ul style="list-style-type: none"> A. Departmental policies and procedures B. Patient transportation procedures to and from department C. Computer operation of departmental application software D. Instrumentation of ultrasound equipment E. Location of equipment and supplies F. Hospital personnel
II.	Evaluation of Ultrasound Orders <ul style="list-style-type: none"> A. Patient identification B. Verification of procedure(s) ordered C. Exam protocol & procedures
III.	Establishing Patient Rapport <ul style="list-style-type: none"> A. Patient status evaluation <ul style="list-style-type: none"> 1. Cooperative/uncooperative 2. Trauma 3. Geriatric B. Explaining procedures
IV.	Patient Preparation <ul style="list-style-type: none"> A. Disrobing B. Patient exam preparation
V.	Room Preparation <ul style="list-style-type: none"> A. Appearance/cleanliness B. Equipment/supplies
VI.	Interaction with Radiologist <ul style="list-style-type: none"> A. Exam presentation
VII.	Core Competencies in Vascular Sonography <ul style="list-style-type: none"> A. Exam <ul style="list-style-type: none"> 1. Scanning technique 2. Positioning skills 3. Equipment manipulation 4. Image acquisition/critique 5. Potential Artifacts 6. Patient interaction/preparation 7. Image orientation and identification

Student Outcomes

Upon completion of the course, the student should be able to execute with minor assistance a normal complete examination of the extracranial carotid system and lower venous system.

The competency criteria used to evaluate the student will ensure that the student will be able to:

- A. Select proper patient positions for the selected images
- B. Prepare the equipment and accessory devices set-up properly
- C. Select the appropriate technical factors
- D. Generate proper anatomical evaluations of ultrasound images
- E. Select the proper technical factor adjustments to produce diagnostic images
- F. Produce a diagnostic Doppler spectral wave form appropriate to the Examination being performed
- G. Demonstrate the proper identification of images

Course Description

This course covers basic positioning and scanning protocol of the vascular system. Vascular terminology specific to the hemodynamics of the arterial venous and cerebrovascular application will be presented. Normal, abnormal, and pathologic states of the human vascular system with emphasis on the external carotid system and the venous systems of the lower extremities are included. The laboratory component of this course will include demonstration and scanning exercises to provide a “live lab” experience in conducting basic vascular procedures.

Course Content Outline

TOPICS	
I.	Testicular A. Normal/abnormal anatomy B. Techniques
II.	Soft Tissue A. Normal soft tissue anatomy B. Cysts, abscesses and other superficial lesions
III.	Extracranial Carotid Systems A. Anatomy and physiology B. Integrate color/Doppler and spectral analysis C. Techniques
IV.	Venous System A. Anatomy and physiology of the lower leg venous system B. Integrate color/Doppler and spectral analysis C. Techniques

Student Outcomes

At the end of this course, the student should be able to:

- A. Demonstrate the ability to perform basic vascular sonographic examinations
- B. Utilize real-time equipment for basic vascular imaging
- C. Differentiate and identify the sonographic appearance of normal and abnormal vascular anatomy
- D. Demonstrate basic knowledge and understanding of vascular physiology, pathophysiology, and hemodynamics in the different types of vascular diseases and dysfunctions
- E. Modify the scanning protocol based on the sonographic findings and differential diagnosis
- F. Evaluate basic normal and abnormal vascular flow patterns and wave forms
- G. Create diagnostic images by utilizing given standards of acceptance
- H. Critique the quality of sonographic images by utilizing given department standards

CARDIAC CLASS SCHEDULE

	Start	End	Times	Day(s)	Lec. Hrs.	Lab Hrs.
1st Course Level - 9 Weeks						
Basic Ultrasound Physics	1/18/2011	3/15/2011	5p - 10p	Tuesday	18	27
Introduction to Sonography	1/20/2011	3/17/2011	5p - 10p	Thursday	18	27
February 21, 2011 - President's Day						
Course Level break March 21 - 25, 2011						
2nd Course Level - 18 Weeks						
Echocardiography (1st 9 weeks)	3/31/2011	6/2/2011	5p - 10p	Thursday	18	27
Cardiac Physiology & Principles (2nd 9 weeks)	6/9/2011	8/4/2011	5p - 10p	Thursday	18	18
Beginning Clinical Experience I	3/28/2011	8/5/2011	8a - 3:30p	M - TH		504
April 18 - 22 - Spring Break; May 30 - Memorial Day; July 4, 2011 - Independence Day						
Course Level break August 8 - 12, 2011						
3rd Course Level - 18 Weeks						
Advanced Echocardiography	8/18/2011	12/15/2011	5p - 10:15p	Thursday	36	36
Beginning Clinical Experience II	8/15/2011	12/16/2011	8a - 3:30p	M - TH		504
November 11 - Veterans Day; Thanksgiving break November 24 & 25, 2011						
Course Level break December 19 - 23, 2011						
4th Course Level - 9 Weeks						
Advanced Ultrasound Physics	12/27/2011	2/21/2012	5p - 8p	Tuesday	27	
Advanced Clinical Experience I	12/27/2012	2/24/2012	8a - 3:30p	M - TH		252
December 26, 2011 - Christmas observed; January 2, 2012 - New Year's Day observed; February 20, 2012 - President's Day						
Course Level break February 27 - March 2, 2012						
5th Course Level - 18 Weeks						
Integrative Study in Sonography	3/6/2012	7/10/2012	5p - 7p	Tuesday	36	
Advanced Clinical Experience II	3/5/2012	7/13/2012	8a - 3:30p	M - TH		504
Basics of Vascular Sonography	3/8/2012	7/12/2012	5p - 8p	Thursday	27	27
April 2 - 6 - Spring Break; May 28 - Memorial Day; July 4, 2012 - Independence Day						
Any clinical hours missed due to a holiday will be made up by arrangement.						
There is a 30 minute lunch included for all clinical days assigned.						

Course Description

This course covers basic principles and terminology of diagnostic ultrasound physics to include: a review of mathematical skills, transducers, beam dynamics and instrumentation. Hands-on instruction will be provided to introduce the student to necessary elementary skills in scanning as it pertains to the physical nature of ultrasound.

Course Content Outline

TOPICS	
I.	Introduction to Ultrasound and Elementary Principles <ul style="list-style-type: none"> A. Nature of ultrasound/definition of sound B. Frequency, wavelength, propagation speed C. Properties of ultrasound waves D. Review of mathematical units
II.	Propagation of Ultrasound Through Tissues <ul style="list-style-type: none"> A. Speed of sound in tissues B. Reflection C. Refraction D. Attenuation
III.	Image Features and Artifacts <ul style="list-style-type: none"> A. Definition of artifacts B. Reverberation, refraction C. Shadowing and enhancement D. Review artifacts on images
IV.	Basic Physics and Instrumentation <ul style="list-style-type: none"> A. Ultrasound transducers <ul style="list-style-type: none"> 1. the piezoelectric effect 2. transducer construction and characteristics 3. focusing 4. beam width and lateral resolution 5. pulse duration and axial resolution 6. transducer B. Pulse Echo Instruments <ul style="list-style-type: none"> 1. characteristics 2. output power 3. receiver gain (TGC) 4. signal processing C. Image Storage and Display <ul style="list-style-type: none"> 1. scan converter 2. digital systems 3. resolution and field of view 4. display devices and controls 5. measurements of dimensions 6. recording techniques

Student Outcomes

At the end of this course, the student should be able to:

- A. Demonstrate knowledge of basic acoustical physics and ultrasound instrumentation
- B. Employ a basic understanding of the propagation of ultrasound through tissues
- C. Select the appropriate techniques for performed examinations
- D. Adjust instrument controls to optimize image quality
- E. Evaluate and compensate for acoustical artifacts
- F. Prepare hard copy documentation of examination findings
- G. Perform linear area, circumference and other related measurements from sonographic images

Course Description

This course is an overview of diagnostic medical sonography (DMS) and its role in health care delivery. Students will be oriented to the academic and administrative structure of the program, clinical affiliates, and to the profession as a whole. Ethical and legal responsibilities of the professional relative to health care delivery will be addressed. An introduction to the principles, instruments, and routine sonographic procedures will be emphasized. The laboratory portion of this course will include a hands-on orientation to the computerized equipment and instrumentation. An orientation in the use of the library and library materials will also be presented.

Course Content Outline

TOPICS	
I.	Introduction to the Diagnostic Sonography Program A. General information B. Clinical education centers C. Duties/responsibilities of the student sonographer
II.	Professional Organizations A. Purpose, functions and activities B. National C. State
III.	Professional Development A. Career mobility B. Career advancement C. Continuing education
IV.	History A. Ultrasound
V.	Hospital Organization A. Health care delivery system B. Hospital Information System (HIS) 1. Accessing information 2. Data bases C. Radiology Information System (RIS) – computer applications – DICOM D. Ultrasound Department
VI.	Medical Terminology A. Sonographic medical terminology
VII.	The Sonographer and Patient Communication A. Professional ethics B. Patient's legal rights C. Confidentiality & privacy issues and patient computer records
VIII.	General Patient & Operator Care A. Body mechanics, moving and transferring patients
IX.	Exploring the Library A. Orientation to the library B. Availability of library/program reference material C. Understanding the differences between information and knowledge
X.	Basic operation and function of a computer and the ultrasound machine

Student Outcomes

At the end of this course, the student should be able to:

- A. Use proper medical terminology specific to the sonography environment
- B. Analyze the various program policies and provide a rationale for their existence
- C. Diagram the major duties/responsibilities of a student sonographer
- D. Compare and contrast the functions of the various components of the health care system and their relationship with the sonography department
- E. Relate purposes, functions and activities of the national professional organization
- F. Compare and contrast the various career advancement opportunities available to the sonographer
- G. Utilize and understand the basic operation and function of an ultrasound machine
- H. Select and demonstrate proper principles of body mechanics applicable to patient care and employee well-being
- I. Name & describe the typical digital computer components and their functions
- J. Describe common computer applications and related social and ethical problems/impact
- K. Learn fundamental operation and concepts of word processing, spreadsheet, and/or database software applications
- L. Understand the difference between information and knowledge
- M. Understand the links among information centers and the access points available through technology and reference sources
- N. Understand the basic structure of electronic databases and the strategies used to access them

Course Description

This course covers an introduction to acoustical physics and instrumentation, echocardiographic positioning and scanning protocol including 2D, M-mode, Color Flow, and Doppler Imaging; related anatomy, hemodynamics, and physiology to include ventricular function, intracardiac anatomy, valvular anatomy and function; pathology and clinical symptomology and how they relate to the sonographic appearance of these structures. Interpretation and critique of normal and abnormal anatomy with correlation of clinical, didactic, and image information will be presented. The laboratory component of this course will include demonstration and scanning exercises to provide a “live lab” experience in conducting echocardiographic procedures.

Course Content Outline

- I. Introduction to the Basics
 - A. Acoustical Physics
 - B. Ultrasound Instrumentation

- II. Heart
 - A. Anatomy
 - B. Normal/Pathology
 - C. Hemodynamics

- III. Imaging Techniques
 - A. Two-Dimensional (2D)
 - B. M-mode
 - C. Color Flow
 - D. Doppler

- IV. Transthoracic Views
 - A. Parasternal
 - B. Apical
 - C. Suprasternal
 - D. Subcostal

- V. Aortic Valve
 - A. Anatomy
 - B. Pathology
 - C. Technique

- VI. Mitral Valve
 - A. Anatomy
 - B. Pathology
 - C. Technique

- VII. Tricuspid Valve
 - A. Anatomy
 - B. Pathology
 - C. Technique

- VIII. Pulmonic Valve
 - A. Anatomy
 - B. Pathology
 - C. Technique

- IX. Cardiac Atria and Ventricles
 - A. Anatomy
 - B. Cardiomyopathies
 - C. Function

- X. Pericardium
 - A. Anatomy
 - B. Pathology
 - C. Technique

- XI. Pediatric Echo
 - A. Technique
 - B. Congenital Pathology

Student Outcomes

At the end of this course, the student should be able to

- A. Demonstrate the ability to perform an echocardiographic examination
- B. Utilize real-time equipment for cardiac imaging
- C. Differentiate and identify sonographic appearance of normal cardiac anatomic structures
- D. Recognize and identify the cardiac disease processes and pathophysiology as it relates to imaging
- E. Modify the scanning protocol based on the echocardiographic findings and differential diagnosis

Cardiac Physiology & Principles (Course Level 2) 9 weeks

Course Description

This course covers cardiac physiology and cardiac physics as it relates to echocardiography. The emphasis will describe the effects of pressure, loading, and volume as they relate to the following disease states: heart failure, shock, valvular stenosis and regurgitation, intracardiac shunts, pulmonary disease, pericardial disease, and cardiomyopathies. Hemodynamics, Spectral Doppler, and Color Flow technologies will be described. The laboratory component of this course will include demonstration and scanning exercises to provide a “live lab” experience in conducting echocardiographic procedures.

Course Content Outline

- I. Heart
 - a. Anatomy
 - b. Normal/ Pathology
 - c. Hemodynamics

- II. Basic Cardiac Embryology
 - a. Heart tube
 - b. Septation
 - c. Chambers
 - d. Aortic Arches

- III. Congenital Defects
 - a. Cyanotic Lesions
 - b. Noncyanotic Lesions

- IV. Cardiac Evaluation Methods
 - a. Anatomy
 - b. Pathology
 - c. Technique

- V. Principles of Cardiac Hemodynamics
 - a. Physiology- Changes in Disease States
 - b. Pathology
 - c. Pressure and Flow

- VI. Principles and Instrumentation
 - a. Velocity
 - b. Wave Equation
 - c. Propagation Speeds

- VII. Propagation of Ultrasound Through Tissues
 - a. Attenuation
 - b. Reflection
 - c. Refraction
 - d. Scattering

- VIII. Ultrasound Transducers
 - a. Anatomy
 - b. Cardiomyopathies
 - c. Function

- IX: Doppler
 - a. Pulsed Wave
 - b. Continuous Wave
 - c. Artifacts

- X: Bioeffects and Safety
 - a. ALARA Principle
 - b. Ultrasound Intensity

Student Outcomes

At the end of this course, the student should be able to:

- A. Demonstrate the ability to perform an advance echocardiographic examination
- B. Utilize real-time equipment for cardiac imaging
- C. Differentiate and identify disease states as it relates to increased pressure, volume overload, valvular stenosis, or cardiomyopathies.
- D. Recognize and identify the cardiac disease processes and pathophysiology as it relates to imaging
- E. Modify the scanning protocol based on echocardiographic findings and differential diagnosis

Course Description

This course provides clinical experience for application of theoretical principles and concepts covered in previous and current didactic coursework. Clinical experience in patient care and handling, scanning techniques, instrumentation, work efficiency and image evaluation for cardiac imaging is provided.

Course Content Outline

- I. Orientation to Ultrasound Department
 - A. Departmental policies and procedures
 - B. Patient transportation procedures to and from department
 - C. Computer operation of departmental application software
 - D. Instrumentation of ultrasound equipment
 - E. Location of equipment and supplies
 - F. Hospital personnel

- V. Evaluation of Ultrasound Orders
 - A. Patient identification
 - B. Verification of procedure(s) ordered
 - C. Exam protocol & procedures

- VI. Establishing Patient Rapport
 - A. Patient status evaluation
 - a. Cooperative/uncooperative
 - b. Trauma
 - c. Geriatric
 - B. Explaining procedures

- VII. Patient Preparation
 - A. Disrobing
 - B. Patient exam preparation

- V. Room Preparation
 - A. Appearance/cleanliness
 - B. Equipment/supplies

- VI. Interaction with Cardiologist
 - A. Exam presentation

- VII. Core Competencies in Echocardiography
 - A. Exam
 - a. Scanning technique
 - b. Positioning skills
 - c. Equipment manipulation
 - d. Image acquisition/critique
 - e. Potential Artifacts
 - f. Patient interaction/preparation
 - g. Image orientation and identification

Student Outcomes

Upon completion of the course, the student should be able to independently execute with minimal assistance, a normal complete echocardiographic examination to include intracardiac anatomy and great vessel orientation.

The competency criteria used to evaluate the student will ensure that the student will be able to:

- A. Arrange the patient's position correctly
- B. Set up the equipment and accessory devices properly
- C. Select the appropriate technical factors
- D. Evaluate the proper anatomical evaluation on ultrasound images
- E. Estimate the proper adjustment in technical factors to produce diagnostic images
- F. Demonstrate proper scan identification

Course Description

This course covers advanced echocardiographic sonographic positioning and scanning protocol including transthoracic, transesophageal, pediatric, and fetal echocardiography; related anatomy and physiology to include cardiac pathology and clinical symptomology and how they relate to the sonographic appearance of these structures. Interpretation and critique of normal and abnormal anatomy with correlation of clinical, didactic and image information will be presented. The laboratory component of this course will include demonstration and scanning exercises to provide a “live lab” experience in conducting echocardiographic sonographic procedures.

Course Content Outline

- I. Heart
 - a. Anatomy
 - b. Normal/ Pathology
 - c. Hemodynamics
- II. Imaging Techniques
 - a. Two-Dimensional (2D)
 - b. M-mode
 - c. Color Flow
 - d. Doppler
 - e. Pediatric Echo
 - f. Fetal Echo
 - g. Contrast Echo
 - h. Stress Echo
- III. Transthoracic Views
 - a. Parasterna
 - b. Apical
 - c. Suprasternal
 - d. Subcostal
- IV. Aortic Valve
 - a. Anatomy
 - b. Pathology
 - c. Technique
- V. Mitral Valve
 - a. Anatomy
 - b. Pathology
 - c. Technique
- VI. Tricuspid Valve
 - a. Anatomy
 - b. Pathology
 - c. Technique
- VII. Pulmonic Valve
 - a. Anatomy
 - b. Pathology
 - c. Technique
- VIII. Cardiac Atria and Ventricles

- a. Anatomy
- b. Cardiomyopathies
- c. Function

IX. Pericardium

- a. Anatomy
- b. Pathology
- c. Technique

X. Pediatric Echo

- a. Technique
- b. Congenital Pathology

Student Outcomes

At the end of this course, the student should be able to:

- A. Demonstrate the ability to perform an advanced echocardiographic examination
- B. Utilize real-time equipment for advanced cardiac imaging
- C. Differentiate and identify sonographic appearance of normal cardiac anatomic structures
- D. Recognize and identify the cardiac disease processes and pathophysiology as it relates to advanced cardiac imaging
- E. Modify the scanning protocol based on advanced echocardiographic findings and differential diagnosis

Course Description

This course provides clinical experience for application of theoretical principles and concepts covered in previous and current didactic coursework is provided. Clinical experience in patient care and handling, scanning techniques, instrumentation, work efficiency and image evaluation for echocardiographic imaging.

Course Content Outline

- I. Orientation to Ultrasound/Cardiology Departments
 - A. Departmental policies and procedures
 - B. Patient transportation procedures to and from department
 - C. Computer operation of departmental application software
 - D. Instrumentation of ultrasound equipment
 - E. Location of equipment and supplies
 - F. Hospital personnel

- II. Evaluation of Ultrasound Orders
 - A. Patient identification
 - B. Verification of procedure(s) ordered
 - C. Exam protocol & procedures

- III. Establishing Patient Rapport
 - A. Patient status evaluation
 - 1. Cooperative/uncooperative
 - 2. Trauma
 - 3. Geriatric
 - B. Explaining procedures

- IV. Patient Preparation
 - A. Disrobing
 - B. Patient exam preparation

- V. Room Preparation
 - A. Appearance/cleanliness
 - B. Equipment/supplies

- VI. Interaction with Cardiologist
 - A. Exam presentation

- VII. Core Competencies in Echocardiography
 - A. Exam
 - 1. Scanning technique
 - 2. Positioning skills
 - 3. Equipment manipulation
 - 4. Image acquisition/critique
 - 5. Potential Artifacts
 - 6. Patient interaction/preparation
 - 7. Image orientation and identification

Student Outcomes

Upon completion of the course, the student should be able to independently execute with minimal assistance, a normal complete echographic examination to include 2D, M-Mode, Color and Spectral Doppler.

The competency criteria used to evaluate the student will ensure that the student will be able to:

- A. Evaluate proper patient preparation
- B. Arrange the patients position correctly
- C. Set up the equipment and accessory devices properly
- D. Select the appropriate technical factors
- E. Evaluate the proper anatomical evaluation on ultrasound images
- F. Estimate the proper adjustment in technical factors to produce diagnostic images
- G. Demonstrate proper film identification

Course Description

This course is a continuation of basic physics and instrumentation including continuous and pulsed wave Doppler. Basic principles of color flow imaging, advanced principles in medical ultrasound instrumentation, hemodynamics, bioeffects, artifacts, and sonographic quality control procedures are also covered.

Course Content Outline

TOPICS	
I.	Physical Principles of Doppler <ul style="list-style-type: none"> a. Doppler equation b. Doppler effect
II.	Instrumentation
III.	Continuous wave and pulsed Doppler <ul style="list-style-type: none"> a. Differences b. Advantages and disadvantages of each
IV.	Duplex Instruments
V.	Spectral Analysis
VI.	Basic of Color Flow Imaging <ul style="list-style-type: none"> a. Advantages and limitations b. Artifacts
VII.	Power Doppler
VIII.	Tissue
IX.	Quality Assurance of Ultrasound Instruments <ul style="list-style-type: none"> a. General Concepts b. Parameters to be evaluated c. Preventative maintenance d. Record keeping
X.	Bioeffects and safety
XI.	Bioeffects <ul style="list-style-type: none"> a. dosimetric quantities b. acoustic exposure c. intensity
XII.	Experimental Biological Effects Studies
XIII.	In Vitro Studies
XIV.	Epidemiological Studies
XV.	AIUM Statements

Student Outcomes

At the end of this course, the student should be able to:

- A. Employ a basic understanding of the physical principles of the Doppler equation
- B. Select the appropriate techniques for performing Doppler examinations
- C. Adjust instrument controls to optimize image quality
- D. Evaluate and compensate for acoustical Doppler artifacts
- E. Prepare hard copy documentation of examination findings
- F. Demonstrate knowledge and understanding of the interaction between ultrasound and tissue and the probability of biological effects
- G. Distinguish between normal and abnormal continuous wave, pulse Doppler and basic color flow Doppler
- H. Assess the basic parameters of quality assurance of ultrasound instruments

Course Description

This course provides continued clinical experience for application of theoretical principles and concepts covered in previous and current didactic coursework. Clinical experience in patient care and handling, scanning techniques, instrumentation, work efficiency and image evaluation for cardiac imaging is provided.

Course Content Outline

- I. Orientation to Ultrasound Department
 - a. Departmental policies and procedures
 - b. Patient transportation procedures to and from department
 - c. Computer operation of departmental application software
 - d. Instrumentation of ultrasound equipment
 - e. Location of equipment and supplies
 - f. Hospital personnel
- II. Evaluation of Ultrasound Orders
 - a. Patient identification
 - b. Verification of procedure(s) ordered
 - c. Routine and non-routine exam protocol & procedures
- III. Establishing Patient Rapport
 - a. Patient status evaluation
 - b. Pathologic condition
 - c. Explaining procedures
- IV. Patient Preparation Accommodations
 - a. Disrobing
 - b. Patient exam preparation
- V. Room Preparation
 - a. Appearance/cleanliness
 - b. Special equipment/supplies
- VI. Interaction with Cardiologist
 - a. Pathological exam presentation
- VII. Core Competencies in Echocardiography with an Emphasizes on Pathology
 - a. Exam
 - i. Scanning technique
 - ii. Positioning skills
 - iii. Equipment manipulation
 - iv. Image acquisition/critique
 - v. Potential Artifacts
 - vi. Patient interaction/preparation
 - vii. Image orientation and identification

Student Outcomes

Upon completion of the course, the student should be able to independently execute with minimal assistance:

- A. An abnormal complete echocardiographic examination to include intracardiac anatomy and great vessel orientation and
- B. M-Mode, 2D techniques and
- C. Spectral Doppler analysis and color flow techniques.

Course Description

This course covers a comprehensive analysis and assessment of all previous diagnostic medical sonography instructional coursework in preparation for writing the national registry examination. Job market readiness skills will also be presented.

Course Content Outline

TOPICS	
I.	Ultrasound Physics and Instrumentation
II.	Abdominal
III.	Obstetrics
IV.	Gynecology
IV.	Basic Vascular Anatomy
V.	Basic Vascular Sonographic Procedures
VI.	Employment Preparation

Student Outcomes

Upon completion of the course, the student should be able to

- A. Analyze academic strengths and weakness and determine corrective measures necessary in order to achieve a passing score on a pre-registry written examination
- B. Prepare one job resume and cover letter
- C. Evaluate the various job opening listed and formulate and plan for obtaining employment

Course Description

This course provides clinical experience for advanced application of theoretical principles and concepts covered in previous and current didactic coursework. Clinical experience in patient care and handling, scanning techniques, instrumentation, work efficiency and image evaluation for cardiac imaging is provided.

Course Content Outline

- I. Orientation to Ultrasound Department
 - a. Departmental policies and procedures
 - b. Patient transportation procedures to and from department
 - c. Computer operation of departmental application software
 - d. Instrumentation of ultrasound equipment
 - e. Location of equipment and supplies
 - f. Hospital personnel

- II. Evaluation of Ultrasound Orders
 - a. Patient identification
 - b. Verification of procedure(s) ordered
 - c. Exam protocol & procedures

- III. Establishing Patient Rapport
 - a. Patient status evaluation
 - i. Cooperative/uncooperative
 - ii. Trauma
 - iii. Geriatric
 - b. Explaining procedures

- IV. Patient Preparation
 - a. Disrobing
 - b. Patient exam preparation

- V. Room Preparation
 - a. Appearance/cleanliness
 - b. Equipment/supplies

- VI. Interaction with Cardiologist
 - a. Exam presentation

- VII. Final Competencies in Echocardiography Exam
- VIII. Exam
 - a. Scanning technique
 - b. Positioning skills
 - c. Equipment manipulation
 - d. Image acquisition/critique
 - e. Potential Artifacts
 - f. Patient interaction/preparation
 - g. Image orientation and identification

Student Outcomes

Upon completion of the course, the student should be able to independently execute:

- A. A normal complete echocardiographic examination to include intracardiac anatomy and great vessel orientation
- B. Advanced M-Mode, 2D techniques
- C. Advanced quantitative spectral Doppler analysis and color flow techniques

Basics of Vascular Sonography (Course Level 5) 18 weeks

Course Description

This course covers basic positioning and scanning protocol of the vascular system. Vascular terminology specific to the hemodynamics of the arterial venous and cerebrovascular application will be presented. Normal, abnormal, and pathologic states of the human vascular system with emphasis on the external carotid system and the venous systems of the lower extremities are included. The laboratory component of this course will include demonstration and scanning exercises to provide a “live lab” experience in conducting basic vascular procedures.

Course Content Outline

TOPICS
I. Testicular a. Normal/abnormal anatomy b. Techniques
II. Soft Tissue a. Normal soft tissue anatomy b. Cysts, abscesses and other superficial lesions
III. Extracranial Carotid Systems a. Anatomy and physiology b. Integrate color/doppler and spectral analysis c. Techniques
IV. Venous System a. Anatomy and physiology of the lower leg venous system b. Integrate color/doppler and spectral analysis c. Techniques

Student Outcomes

At the end of this course, the student should be able to:

- A. Demonstrate the ability to perform basic vascular sonographic examinations
- B. Utilize real-time equipment for basic vascular imaging
- C. Differentiate and identify the sonographic appearance of normal and abnormal vascular anatomy
- D. Demonstrate basic knowledge and understanding of vascular physiology, pathophysiology, and hemodynamics in the different types of vascular diseases and dysfunctions
- E. Modify the scanning protocol based on the sonographic findings and differential diagnosis
- F. Evaluate basic normal and abnormal vascular flow patterns and wave forms
- G. Create diagnostic images by utilizing given standards of acceptance
- H. Critique the quality of sonographic images by utilizing given department standards