

DEGREE PLAN

**Degree: Associate of Science in Health Sciences (ASHS)**

**Major: Radiation Health Technician (Navy)**

The ASHS degree requires at least 60 semester hours with:

- GPA of at least 2.0 and a grade of C- or better in all courses
- Residence of at least 25% of the degree plan
- General Education of at least 30 semester hours
- Major Technical Field of Study of at least 15 semester hours
- General Electives (if needed to achieve 60 semester hours)

| General Education Requirements (30)                  |                     |  | Hours     | Major/Gen Elective Requirements (30)                  |   |  | Hours     |
|--|---------------------|--|-----------|---|---|--|-----------|
| <b>Communication (6 min)</b>                         |                     |  |           | <b>Major Technical Field of Study (15 min)</b>        |   |  |           |
| Oral   | Transfer Coursework |  | 3         | RHT 2201*   | Radiological Calculations                           |  | 2         |
| Written  | Transfer Coursework |  | 3         | RHT 2402*   | Fundamentals of Nuclear and Radiation Physics       |  | 4         |
| <b>Quantitative Science (9 min)</b>                  |                     |  |           | RHT 2303*   | Radiation Biology and Medical Surveillance Programs |  | 3         |
| Math   | Transfer Coursework |  | 3         | RHT 2304*   | Radioactive Decontamination and Casualty Response   |  | 3         |
| Natural Sci  | Transfer Coursework |  | 3         | RHT 2305*   | Radiation Protection and Program Administration     |  | 3         |
| Health Sci   | Transfer Coursework |  | 3         | <b>General Electives</b>                              |   |  |           |
| <b>Human Science (6 min)</b>                         |                     |  |           | Gen Elec  | Transfer Coursework                                 |  | 15        |
| Social Sci   | Transfer Coursework |  | 3         |   |   |  |           |
| Humanity   | Transfer Coursework |  | 3         |   |   |  |           |
| <b>Additional General Education</b>                  |                     |  |           |   |   |  |           |
| Gen Ed 1   | Transfer Coursework |  | 3         |   |   |  |           |
| Gen Ed 2   | Transfer Coursework |  | 3         |   |   |  |           |
| Gen Ed 3   | Transfer Coursework |  | 3         |   |   |  |           |
| <b>General Education Requirements Total (min 30)</b> |                     |  | <b>30</b> | <b>Major/Gen Elective Requirements Total (min 30)</b> |   |  | <b>30</b> |

\*These courses are part of the Radiation Health Technician core requirements for Navy personnel and fulfill CAHS' residency requirements.

To receive the ASHS degree the student must:

- 1) Complete all requirements above and send the official transcript(s) to CAHS.
- 2) Submit a CAHS request for graduation.

As of: 24 Feb 2021

**COURSE SYLLABUS**

**Program:** Radiation Health Technician **Effective Date:** 04 October 2021

**Course:** RHT 2201 Radiological Calculations **2 Semester Hours**

**Description:** This course is designed to teach students how to perform collegiate arithmetic operations used in radiological calculations. The course provides a review of general collegiate mathematics, introductory algebra. Topics include decimals, percentages, conversion of proper and improper fractions to mixed numbers, unit conversion, application of exponent and logarithmic rules, and algebra.

**Context:** **Prerequisites** – Good academic standing.

**Repeatable** – This course is not repeatable for credit.

**General Education** – This course does not satisfy general education requirements of the CAHS.

**Design** – This course is designed with a Modified Didactic format.

**Outcomes:** The student will be able to do the following:

1. Perform mathematical operations using appropriate formats of expression, terms, units, signs and symbols.

**Assessment:** Outcomes will be assessed through a variety of mechanism including:

1. Formative discussions
2. Formative quizzes
3. Written assignments
4. Demonstration
5. Summative examination

**Instruction:** This course will adhere to the following **Outline of Instruction:**

- A. Course Indoctrination
- B. Utilize scientific calculator
- C. Discuss mathematical expressions
- D. Calculate algebraic operations
- E. Calculate arithmetic operations
- F. Calculate scientific notation
- G. Calculate ratios and proportions
- H. Perform unit conversions

**Material:** The following materials are required:

The required course package for Radiological Calculations will be issued to the student during the first day of instruction.

Scientific calculator to be issued to the student during the first day of instruction.

**Schedule:** The course will proceed per the following schedule:

| Topics          | Outcomes | Evaluations  |
|-----------------|----------|--|
| A,B,C,D,E,F,G,H | 1        | Formative discussion, demonstration, formative quiz, written assignment, & summative examination |

**Course Policies:** The following policies apply to the Naval Undersea Medical Institute.

**Grading Policy** – Letter grades with modifiers are assigned as defined below for CAHS programs.

| Letter | Score  | Grade Points |
|--------|--------|--------------|
| A      | 90-100 | 4.00         |
| B      | 80-89  | 3.00         |
| C      | 70-79  | 2.00         |
| D      | 60-69  | 1.00         |
| F      | <60    | 0.00         |

All students must achieve a final grade of 75% cumulative average to successfully complete the course. *\*Final grade is an average of both quizzes and the final exam. A Minimum score of 75% on each assessment is required.*

Definitions of abbreviations used in the grade sheets/transcripts beyond the traditional A, B, C, D, F letter grade, consist of the following:

| Grade    | Description   |
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| <b>I</b> | Incomplete. The grade of “I” is issued when the student has not completed the course requirements, such as taking the final examination, submitting required assignments or required course work, completing required hours within a practicum or internship. The grade of “I” is assigned <u>only</u> with the approval of the Dean or designated Official according to school policy. The course director must make a recommendation in writing to the Dean, or designated representative, with a copy to the Registrar, as to how and by what date the temporary “I” grade will be converted to a permanent grade. Failure to fulfill the stipulated requirements by the specified date, unless an extension is granted by the involved course director and approved by the Dean, will result in conversion of the “I” grade to a grade of “F”. The temporary grade of “I” must be changed to a permanent grad prior to graduation. Per USU Instruction 6025C, a grade of “I” may be given with the interruption of academic duties due to temporary disability. |
| <b>W</b> | Withdrawal. The grade “W” is used when a student withdraws before the course session is complete. Per USU Instruction 6025, a grade of “W” may be given with the interruption of academic duties due to temporary disability.   |

**Student Grievance/Appeal** – The purpose for the Student Appeal Process is to provide a mechanism for objective internal review of faculty and staff actions or School Committee decisions. This Review Process may be utilized by students enrolled in courses in the College of Allied Health Sciences who believe these decisions resulted from inequitable and/or discriminatory decision-making procedures or processes. The wisdom of a decision cannot be grieved. Only the process that is believed to be inequitably applied, within the referent group, can be grieved. Implicit in this process is the need for the cooperation, openness, and good faith of all parties involved.

Students who wish to appeal a grade, may request to do so in a written letter to Associate Dean and using the CAHS Student Grievance/Appeal form. The student will have no more than ten (10) business days to grieve or appeal a grade decision in writing. All other appeals processes are outlined in the specific program testing plan. All CAHS replies to the student will be in writing, and copies of the grievance/appeal including all directly related correspondence will be maintained by the Associate Dean.

The decision of the Dean is final and cannot be appealed.

**Attendance** - Students are expected to be in attendance at all times. Students who miss more than 24 hours/ or 3 class (training) days may be subject to non-academic relief. Students are required to make up any absent time, missed classroom notes, assignments, and examinations.

**Excused absence** - Excused class absence time may count against the required attendance time, but may be made up after-duty hours at the discretion of the student's advisor with approval from the Program Director. The following list some examples of excused absences:

- a. Excused absence not requiring make up time:
  - (1) Military Promotion Testing
  - (2) Military appointments/events - Command mandated
- b. Excused absence requiring make-up time:
  - (1) Red Cross message
  - (2) Medical/dental appointments of a non-elective nature for service member only
  - (3) Sick-Call/Quarters

**Unexcused absence** - Unexcused class absence counts against the required attendance time, but usually may not be made up after duty hours unless special arrangements are made. The following list some examples of unexcused absences:

- (1) Tardiness: Tardiness may result in administrative and/or disciplinary action by the Service Component and will be documented through formal counseling.
- (2) Automobile repairs
- (3) Childcare issues
- (4) Elective appointments during training time

**Classroom Arrival** - Students are expected to be in the classroom at the scheduled class start time. If an instructor is not present in the classroom, study materials should be utilized.

**Other Arrivals** - Any time students are expected to be somewhere other than the classroom, the same attendance/tardiness rules apply. Students should be congregated at the designated meeting point. (Waiting in a privately owned vehicle (POV) does not constitute arrival or attendance).

**Uniform** – Uniform of the day for all military personnel is the uniform required of each respective service. Civilian and contract personnel will wear business casual attire.

**Cell Phones** – Use of a personal cell phone within the classroom is allowable only at the direction of faculty.

**Lunch** – All students will be afforded a reasonable opportunity for lunch as indicated in the supplemental course agenda. All students are encouraged to eat lunch.

**Restrooms** – Restroom breaks are provided once each hour, however, students have the latitude to take bathroom breaks as may be necessary.

**Food and drink** – Hard candy is the only food allowed in the classroom. All drinks must be contained within a closed container.

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**COURSE SYLLABUS**

**Program:** Radiation Health Technician **Effective Date: 04 October 2021**

**Course:** RHT 2303 Radiation Biology and Medical Surveillance Programs **3 Semester Hours**

**Description:** This course is designed to teach the student biological effects of ionizing radiation at the molecular, cellular, and organismal levels with emphasis on vertebrates; both acute and chronic radiation effects are considered. Students are taught how to monitor radiation levels, to take action to prevent dangerous exposure, and ensure that facilities comply with applicable regulations. The course includes patient simulation scenarios for students to prepare associated medical laboratory studies, physical examinations, and obtain medical history before verbally presenting the patient to a physician. Topics include exposure safety limits of dynamic human beings, environmental and health assessments, the preventive maintenance and calibration of complex instrumentation and protective equipment, medical record screening, and medical assistant physical examination preparation for the Radiation Medical Examination.

**Context:** **Prerequisites** – Good academic standing.

**Repeatable** – This course is not repeatable for credit.

**General Education** – This course does not satisfy general education requirements of the CAHS.

**Design** – This course is designed with a Modified Didactic format.

**Outcomes:** The student will be able to do the following:

1. Utilize the appropriate reference manuals to train at Naval Nuclear Propulsion Program, Nuclear Weapons, Radiological Affairs Support Program (RASP), and medical activities.
2. Describe the requirements for completion of various types of Ionizing Radiation Medical Examination.
3. Explain the scope of the Radiation Medical Exam (RME).
4. Perform documentation and correction of the RME.
5. Prepare and verbally present simulated patient scenario case studies to the group.
6. Perform the requirements for submission to the Radiation Effects Advisory Board (REAB)
7. Complete RME Exam.

**Assessment:** Outcomes will be assessed through a variety of mechanism including:

1. Formative discussions
2. Formative quizzes
3. Written assignments
4. Demonstration
5. Summative examination
6. Oral Presentation

**Instruction:** This course will adhere to the following **Outline of Instruction:**

- A. Training for personnel within the radiation health program

B. Medical surveillance program

**Material:** The following materials are required:

The required course package for Radiation Health and Medical Surveillance Program will be issued to the student during the first day of instruction.

Simulated health records for patient scenarios will be issued to students during the first day of the course.

**Schedule:** The course will proceed per the following schedule:

| Topics | Outcomes    | Evaluations  |
|--------|-------------|--|
| A      | 1           | Formative discussion, demonstration, formative quiz, written assignment, and summative examination                 |
| B      | 2,3,4,5,6,7 | Formative discussion, demonstration, formative quiz, written assignment, summative examination & oral presentation |

**Course Policies:** The following policies apply to the Naval Undersea Medical Institute.

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All students must achieve a final grade of 75% cumulative average to successfully complete the course. *\*Final grade is an average of both quizzes and the final exam. A Minimum score of 75% on each assessment is required.*

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|-------|-------------|
|-------|-------------|

|          |  |
|----------|--|
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|          | may be given with the interruption of academic duties due to temporary disability.   |
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**COURSE SYLLABUS**

**Program:** Radiation Health Technician **Effective Date: 04 October 2021**

**Course:** RHT 2304 Radioactive Decontamination and Casualty Response **3 Semester Hours**

**Description:** In this course the student learns the process for training workers in radiation safety plans and procedures including donning and proper wear of protective gear for routine work and emergency scenarios. Topics include formulating decontamination plans based upon the extent of detected contamination, decontamination methods, and emergency plans.

**Context:** **Prerequisites** – Good academic standing.

**Repeatable** – This course is not repeatable for credit.

**General Education** – This course does not satisfy general education requirements of the CAHS.

**Design** – This course is designed with a Modified Didactic format.

**Outcomes:** The student will be able to do the following:

1. Perform decontamination of contaminated personnel.
2. Utilize applicable references to manage exposure to various isotopes.
3. Utilize applicable references to establish a decontamination station.
4. Demonstrate donning and removing Anti-contamination Clothing (Anti-Cs) following a procedural guide.
5. Assist as required during a radioactive spill casualty.
6. Complete required program administrative tasks.

**Assessment:** Outcomes will be assessed through a variety of mechanism including:

1. Formative discussions
2. Formative quizzes
3. Written assignments
4. Demonstration
5. Summative examination
6. Instructor evaluation
7. Oral knowledge exam
8. Comprehensive oral knowledge exam

**Instruction:** This course will adhere to the following **Outline of Instruction:**

- A. Personnel Decontamination & Casualty Response
- B. Final Program Administrative Tasks

**Material:** The following materials are required:

The required course package for Personnel Decontamination & Casualty Response will be issued to the student during the first day of instruction.

**Schedule:** The course will proceed per the following schedule:

| Topics | Outcomes  | Evaluations  |
|--------|-----------|--|
| A      | 1,2,3,4,5 | Formative discussion, demonstration, formative quiz, written assignment, instructor evaluation, oral knowledge exam. |
| B      | 6         | Comprehensive oral knowledge test  |

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**COURSE SYLLABUS**

**Program:** Radiation Health Technician **Effective Date: 04 October 2021**

**Course:** RHT 2305 Radiation Protection and Program Administration **3 Semester Hours**

**Description:** In this course the student learns the fundamental principles and theory of radiation protection and associated radiation monitoring programs. Topics include management of pregnant workers, regulatory agencies, dose units; source of radiation; biological effects and risk; dose limits; applications of external and internal dosimetry; shielding and atmospheric dispersion; radiological controls; performing dose estimate calculations and data entry into computerized dose recording systems.

**Context:** **Prerequisites** – Good academic standing.

**Repeatable** – This course is not repeatable for credit.

**General Education** – This course does not satisfy general education requirements of the CAHS.

**Design** – This course is designed with a Modified Didactic format

**Outcomes:** The student will be able to do the following:

1. Direct the exposure monitoring program.
2. Demonstrate Thermoluminescent Dosimeter (TLD) issue and associated paperwork.
3. Demonstrate the ability to update and review exposure documentation.
4. Perform the requirements for dose investigations and dose estimates.
5. Generate the required reports for transfers and declared pregnant workers.
6. Generate dosimetry reports to Naval Dosimetry Center (NDC), Naval Sea Systems Command (NAVSEA), other commands/organizations, and the individual.
7. Generate the dosimetry report to the Commanding Officer.
8. Discuss audits and inspections.

**Assessment:** Outcomes will be assessed through a variety of mechanism including:

1. Formative discussions
2. Formative quizzes
3. Written assignments
4. Demonstration
5. Instructor evaluation

**Instruction:** This course will adhere to the following **Outline of Instruction:**

- A. Administrative Aspects of the Radiation Health Program

**Material:** The following materials are required:

The required course package for Personnel Decontamination & Casualty Response will be issued to the student during the first day of instruction.

**Schedule:** The course will proceed per the following schedule:

| Topics | Outcomes        | Evaluations   |
|--------|-----------------|---|
| A      | 1,2,3,4,5,6,7,8 | Formative discussion, demonstration, formative quiz, written assignment, & instructor evaluation. |

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### COURSE SYLLABUS

**Program:** Radiation Health Technician **Effective Date:** 04 October 2021

**Course:** RHT 2402 Fundamentals of Nuclear and Radiation Physics **4 Semester Hours**

**Description:** This course is designed to teach students key radiological principles including atomic structure, how radiation affects atoms, how affecting an atom can have larger effects on molecules, tissues, organs, and the whole body and the associated dose terminology. Topics also include major components of an atom, interactions of radiation with matter, relativistic dynamics, basic quantum mechanics, direct and indirect ionizing radiation, basic activity and shielding calculations, types of nuclear reactions, cross-sections, radiological nomenclature, chart of the nuclides, sources of background radiation, use of radiological detection instrument, radiation protection standards, and radiation risk communication. Emphasis is placed on applying this knowledge and skill within the context of preventive force health protection.

**Context:** **Prerequisites** – Good academic standing.

**Repeatable** – This course is not repeatable for credit.

**General Education** – This course does not satisfy general education requirements of the CAHS.

**Design** – This course is designed with a Modified Didactic format.

**Outcomes:** The student will be able to do the following:

1. Explain radiological terms, atomic and nuclear structures, interactions of radiation with matter, and the different types of radioactive decay and the conditions necessary for them.
2. Explain the control of internal and external radiation exposure.
3. Explain the early, late and prenatal effects of exposure to ionizing radiation.
4. Explain background radiation.
5. Explain and discuss the risk associated with exposure to ionizing radiation utilizing case studies.
6. State specific sources of radiation exposure from Naval Nuclear Propulsion Program (NNPP), Weapons Program, Radiological Affairs Support Program (RASP) and medical activities.
7. Utilize the appropriate internal and external radiation detection instrument based on expected radiation types and instrument characteristics.
8. Explain radiation protection standards, Environmental and Area Monitoring Programs and area survey programs.
9. Assign the appropriate dosimeter based off the type of program and expected duties of the individual (NNPP, RASP, Weapons, Medical).
10. Discuss the posting of the different types of control areas (radiation area, CSCAs, high airborne, etc.) including posting and survey requirements for each of the different programs (NNPP, medical, RASP, Weapons).

**Assessment:** Outcomes will be assessed through a variety of mechanism including:

1. Formative discussions
2. Formative quizzes

3. Written assignments
4. Demonstration
5. Summative examination

**Instruction:** This course will adhere to the following **Outline of Instruction:**

- A. Fundamentals of Ionizing Radiation
- B. Radiological Controls

**Material:** The following materials are required:

The required course package for Fundamentals of Ionizing Radiation will be issued to the student during the first day of instruction.

**Schedule:** The course will proceed per the following schedule:

| Topics | Outcomes   | Evaluations  |
|--------|------------|--|
| A      | 1,2,3,4,5  | Formative discussion, demonstration, formative quiz, written assignment, & summative examination |
| B      | 6,7,8,9,10 | Formative discussion, demonstration, formative quiz, written assignment, & summative examination |

**Course Policies:** The following policies apply to the Naval Undersea Medical Institute.

**Grading Policy** – Letter grades with modifiers are assigned as defined below for CAHS programs.

| Letter | Score  | Grade Points |
|--------|--------|--------------|
| A      | 90-100 | 4.00         |
| B      | 80-89  | 3.00         |
| C      | 70-79  | 2.00         |
| D      | 60-69  | 1.00         |
| F      | <60    | 0.00         |

All students must achieve a final grade of 75% cumulative average to successfully complete the course. *\*Final grade is an average of both quizzes and the final exam. A Minimum score of 75% on each assessment is required.*

Definitions of abbreviations used in the grade sheets/transcripts beyond the traditional A, B, C, D, F letter grade, consist of the following:

| Grade | Description  |
|-------|--|
| I     | Incomplete. The grade of "I" is issued when the student has not completed the course requirements, such as taking the final examination, submitting required assignments or required course work, completing required hours within a practicum or internship. The grade of "I" is assigned <u>only</u> with the approval of the Dean or designated Official according to school policy. The course director must make a recommendation in writing to the Dean, or designated |

|          |  |
|----------|--|
|          | representative, with a copy to the Registrar, as to how and by what date the temporary “I” grade will be converted to a permanent grade. Failure to fulfill the stipulated requirements by the specified date, unless an extension is granted by the involved course director and approved by the Dean, will result in conversion of the “I” grade to a grade of “F”. The temporary grade of “I” must be changed to a permanent grad prior to graduation. Per USU Instruction 6025C, a grade of “I” may be given with the interruption of academic duties due to temporary disability. |
| <b>W</b> | Withdrawal. The grade “W” is used when a student withdraws before the course session is complete. Per USU Instruction 6025, a grade of “W” may be given with the interruption of academic duties due to temporary disability.  |

**Student Grievance/Appeal** – The purpose for the Student Appeal Process is to provide a mechanism for objective internal review of faculty and staff actions or School Committee decisions. This Review Process may be utilized by students enrolled in courses in the College of Allied Health Sciences who believe these decisions resulted from inequitable and/or discriminatory decision-making procedures or processes. The wisdom of a decision cannot be grieved. Only the process that is believed to be inequitably applied, within the referent group, can be grieved. Implicit in this process is the need for the cooperation, openness, and good faith of all parties involved.

Students who wish to appeal a grade, may request to do so in a written letter to Associate Dean and using the CAHS Student Grievance/Appeal form. The student will have no more than ten (10) business days to grieve or appeal a grade decision in writing. All other appeals processes are outlined in the specific program testing plan. All CAHS replies to the student will be in writing, and copies of the grievance/appeal including all directly related correspondence will be maintained by the Associate Dean.

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