COURSE SYLLABUS

Radiological Transportation & Emergencies

RW 223-01

Arts & Sciences
New Mexico Junior College
5317 Lovington Highway
Hobbs, New Mexico 88260
1. General Course Information

   a. Course Title: Radiological Transportation & Emergencies
   b. Course Number: RW 223-01
   c. Semester/year: Spring/2004
   d. Credit Hours: 3 Hours
   e. Instructor: Olav Amundsen
   f. Office Phone: 505 392 5335 ext 265
   g. Office Hours: by appointment
   h. Prerequisite: RW-214

2. Course Description

   In this course, students will be introduced to the proper procedures for shipping and receiving radioactive material. Department of Energy and the Department of Transportation guidelines will be taught. Additionally, processes related to radiological incidents and emergencies, personnel decontamination and radiological considerations for first aid will be covered. Foundational training in instrumentation that is used in monitoring radioactivity is an important component of the course. Three lecture hours per week.

3. Course Rationale/Transferability

   This course is an undergraduate level course designed to advance the student in Radiological Transportation and Emergencies. The curriculum follows the Department of Energy Handbook 1122-99's content. This course has no guarantee of transferability to other New Mexico Schools or out-of-state institutions. Students are advised to check with the receiving institutions if they intend to transfer to another institution.

4. Required/Suggested Course Materials


   Other material listed with each module under section 7- Specific Course Objectives/Competencies within this document.

5. Grading Policy
Each student is evaluated by homework assignment/pop quizzes, written examinations, reports and projects. Final grades will be determined by averaging three graded areas based on the following scale. A grade of 80 % or better is necessary for certification.

<table>
<thead>
<tr>
<th>Grading Area</th>
<th>Percentage of Overall Grade</th>
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</thead>
<tbody>
<tr>
<td>Written Examinations:</td>
<td>40 % of overall grade</td>
</tr>
<tr>
<td>Homework / Pop Quizzes:</td>
<td>50 % of overall grade</td>
</tr>
<tr>
<td>Final Exam:</td>
<td>10 % of overall grade</td>
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Upon completion of the afore mentioned averaging grades will be administered as follows:

- A = 90-100
- B = 80-89
- C = 70-79
- D = 60-69
- F = 59-00

6. **General Course Objectives/Competencies**

This course is an undergraduate level course designed to further enhance the skills of the student in rules and regulations in the Nuclear Industry. The response to unwanted incidents and emergencies is also covered. The course curricula describes procedures for personnel decontamination and radiological considerations for first aid. Shipment and receiving of radioactive materials is a very public sensitive topic which we will visit in this course. The course is divided into four modules. These modules focus on (1) shipment and receipt of radioactive material, (2) radiological incidents and emergencies, (3) personnel decontamination and (4) radiological considerations for first aid.

7. **Specific Course Objectives/Competencies**

Course Title: Radiological Transportation & Emergencies
Module Title: Shipment/Receipt of Radioactive Material
Module Number: 2.12

Objectives:

2.12.01 List the applicable agencies which have regulations that govern the transport of radioactive material.

2.12.02 Define terms used in DOT regulations.

2.12.03 Describe methods that may be used to determine the radionuclide contents of a package.

2.12.04 Describe the necessary radiation and contamination surveys to be performed on packages and state the applicable limits.

2.12.05 Describe the necessary radiation and contamination surveys to be performed on exclusive use vehicles and state the applicable limits.

2.12.06 Identify the proper placement of placards on a transport vehicle.

2.12.07 Identify inspection criteria that should be checked prior to releasing a shipment at your site.

2.12.08 Describe site procedures for receipt and shipment of radioactive material shipments.

2.12.09 List the actions required at your site if a shipment is received exceeding radiation or contamination limits.

2.12.10 Describe the proper step-by-step method for opening a package containing radioactive material at your site.

REFERENCES

2. 49 CFR, Parts 100-177, “Transportation”

Instructional Aides:

3. Overheads
4. Overhead projector/screen
5. Whiteboard/chalkboard
6. Lessons learned
7. 

Course Title: Radiological Transportation & Emergencies
Module Title: Radiological Incidents and Emergencies
Module Number: 2.13
Objectives:

2.13.01 Describe the general response and responsibilities of an RCT during any incident.

2.13.02 Identify any emergency equipment and facilities that are available, including the location and contents of emergency equipment kits.

2.13.03 Describe the RCT response to a Continuous Air Monitor (CAM) alarm.

2.13.04 Describe the RCT response to a personnel contamination monitor alarm.

2.13.05 Describe the RCT response to off scale or lost dosimetry.

2.13.06 Describe the RCT response to rapidly increasing, unanticipated radiation levels or an area radiation monitor alarm.

2.13.07 Describe the RCT response to a dry or liquid radioactive material spill.

2.13.08 Describe the RCT response to a fire in a radiological area or involving radioactive materials.

2.13.09 Describe the RCT response to other specific site incidents (as applicable).

2.13.10 Describe the response levels associated with radiological emergencies.

2.13.11 Describe site specific procedures for documenting radiological incidents.

2.13.12 Identify the structure of the emergency response organization at your site.

2.13.13 Identify the available offsite incident support groups and explain the assistance that each group can provide.

2.13.14 Discuss radiological incidents at the plant or other plants, including cause, prevention, and recommended incident response.

References:

2. DOE Order 151.1, "Comprehensive Emergency Management Systems".
3. (Site specific emergency preparedness manuals)
Instructional Aides:

8. Overheads
9. Overhead projector/screen
10. Whiteboard/chalkboard
11. Lessons learned
Course Title: Radiological Transportation & Emergencies
Module Title: Personnel Decontamination
Module Number: 2.14

Objectives:

2.14.01 List the three factors which determine the actions taken in decontamination of personnel.

2.14.02 List the preliminary actions and notifications required by the RCT for an individual suspected to be contaminated.

2.14.03 List the actions to be taken by the RCT when contamination of clothing is confirmed.

2.14.04 List the actions to be taken by the RCT when skin contamination is confirmed.

2.14.05 List the steps for using decontamination reagents to decontaminate personnel.

References: (Site Specific)

Instructional Aids:

1. Overheads
2. Overhead projector/screen
3. Chalkboard/whiteboard
4. Lessons learned
Course Title: Radiological Transportation & Emergencies
Module Title: Radiological Considerations for First Aid
Module Number: 2.15

Objectives:

2.15.01 List the proper steps for the treatment of minor injuries occurring in various radiological areas.

2.15.02 List the requirements for responding to major injuries or illnesses in radiological areas.

2.15.03 State the RCT's responsibility at the scene of a major injury in a radiological area after medical personnel have arrived at the scene.

2.15.04 List the requirements for treatment and transport of contaminated injured personnel at your facility.

References:

1. Basic Radiation Protection Technology (2nd edition) - Daniel A. Gollnick
2. Operational Health Physics Training - H. J. Moe
3. Injury or Serious Illness in Regulated or Radiation Zones; Special Hazards Bulletin 4
4. Handling Regulated Area and Radiation Zone Injuries; DPSOL 193 -201

Instructional Aids:

1. Overheads
2. Overhead projector/screen
3. Whiteboard/chalkboard
4. Lessons learned
8. **General/Miscellaneous**

See attached General Information Sheet / Institutional Page

9. **Critical Incident and Evacuation Plan with Evacuation Route Map**

See attached; New Mexico Junior College Emergency/Critical Incident Information sheet and campus map.

10. **Course Outline**

   a. **Class Dates**

      To be arranged

   b. **Instructional Aids:**

      1. Overheads
      2. Overhead projector/screen
      3. Chalkboard/whiteboard
      4. Computer Lab

   c. **Examinations**

      In addition to the final exam, a minimum of one exam for each module will be administered during the semester. The test date and specific course material covered by the exam will be announced during class by the instructor at the start of each module. Examinations must be taken at the scheduled time. If a student is aware that she/he will not be able to take the exam at the scheduled time, then prior to the exam date he/she must reschedule a special examination with the professor. Any other absences from examination will be retaken only if the professor decides it was a valid excuse, otherwise, a grade of “0” will be recorded.

   d. **Late Papers, Homework or Projects**

      Five points per day will be deducted from the grade for late work. Possible field trips associated with class projects will be announced and scheduled as early as practical.

   e. **Tardiness**

      Students are expected to be seated at the time each lecture is scheduled to begin.

   f. **Withdrawal**

      You may officially withdraw from this class on or before the end of the class with a grade of “W”. Last date of withdrawal will be posted by instructor at the beginning of the class.
g. **Audits**

No student may “audit” the class after having signed up for credit. In other words, you may not change from credit status to audit status once the course has commenced.

**h. Attendance**

Students are not required to attend lectures, but will have to take all exams and deliver all homework.