

**RADR 2309 – RADIOGRAPHIC EQUIPMENT
COURSE SYLLABUS**

Faculty Information

Name: Carrie Nanson
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Office: CT 113

Office Hours	
Campus Office Hours:	TBD

Preferred Method of Communication:

The preferred method of communication is through e-mail, but you may also call me in my office if you need to.

Expectations for Engagement for Instructor:

As an instructor, I understand the importance of clear, timely communication with my students. In order to maintain sufficient communication, I will

- provide my contact information at the beginning of the syllabus;
- respond to all messages within 24 hours if received Monday through Thursday, and within 48 hours if received Friday through Sunday; and,
- notify students of any extended times that I will be unavailable and provide them with alternative contact information (for me or for my supervisor) in case of during the time I am unavailable.

As an instructor, I understand that my students will work to the best of their abilities to fulfill the course requirements. In order to help them in this area, I will

- provide clear information about grading policies and assignment requirements in the course syllabus, and
- communicate any changes to assignments and/or to the course calendar to students as quickly as possible.

As an instructor, I understand that I need to provide regular, timely feedback to students about their performance in the course. To keep students informed about their progress, I will

- post grades for discussion postings within one week of the discussion thread closing.
- provide grades for major assignments within 2 weeks of the due date or at least 3 days before the next major assignment is due, whichever comes first.

Textbook Information and Required Hardware/Software

Textbook(s):

Radiologic Science for Technologists, 10th. Ed. Stewart Bushong
The Integrated Radiography Workbook, 5th. Ed. Robert DeAngelis

.Information About the Course

Course Description

Equipment and physics of x-ray production. Includes basic x-ray circuits. Also examines the relationship of conventional and digital equipment components to the imaging process.

Course Prerequisites:

RADR 1311(Source: Odessa College Catalog of Courses 2012-2013, page 178)

Course coerequisites

RADR 1266, RADR 1303, and RADR 2301

Grading

Type of Assignment	Percentage
Unit Exams	40%
Daily Grades	20%
Final Exam	40%

Grading Scale:

“A” = 93-100

“B” = 84-92

“C” = 75-83

“F” = below 75

Grading Policy:

Please understand that this is a required course for the Radiologic Technology program in order to prepare you to become an entry-level radiologic technologist. Quality work and active participation is expected and not to be negotiated. As a general policy, grades will be taken in class. Any written assignments or tests will be graded outside of class. You can expect feedback on assignments within a week’s time.

Student Course Participation

As a student, I understand that I am responsible for keeping up with the course. To help with this, I will

- identify alternative computer and internet access in case my primary computer crashes or my internet service is unavailable;
- recognize that the college provides free wi-fi and computer labs during regular campus hours to help me with accessing my course; and,
- understand that my instructor does not have to accept my technical issues as a legitimate reason for late or missing work if my equipment or service is unreliable.

As a student, I understand that it is my responsibility to communicate quickly with the instructor any issue or emergency that will impact my involvement with or performance in the class. This includes, but is not limited to

- getting “kicked off” of the system during tests or quizzes;
- having trouble submitting assignments; and

- dealing with a traumatic personal event.

As a student, I understand that it is my responsibility to understand course material and requirements and to keep up with the course calendar. While my instructor is available for help and clarification, I will

- seek out help from my instructor and/or from tutors;
- ask questions if I don't understand; and
- access my course several times during the week to keep up with assignments and announcements.

Course Policies

Disclaimer

This syllabus is tentative and subject to change in any part at the discretion of the instructor. Any changes will be in accordance with Odessa College policies. Students will be notified of changes, if any, in timely manner.

Original Effort

The work submitted for this course must be original work prepared by the student enrolled in this course. Efforts will be recognized and graded in terms of individual participation and in terms of ability to collaborate with other students in this course.

Course Alignment with Industry Standards

This program is accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT). The course content is outlined in the American Society of Radiologic Technologist (ASRT) Curriculum Guide.

Digital Protocol

Cell phones must be placed on either vibrate or silent mode and are to be accessed in emergency cases only. The use of laptops or any other digital device is permitted in order to facilitate note-taking relative to instruction. Any written assignments will be submitted electronically on Blackboard. The electronic recording of the time on Blackboard will be considered the time of assignment submission. Take necessary steps to ensure that your assignments are submitted on "Blackboard" time. Back-up and/or additional copies of all assignments submitted is encouraged. Computers/printers are available to OC students in the LRC (301-303); therefore, not having access to a computer due to technical issues (crash; corrupted files) will not be considered as an acceptable reason for not completing assignments. If there is a loss of server connection with Odessa College due to maintenance, then an email will be sent to student with pertinent information and status reports. Assignments submitted electronically need to be WORD documents (doc or docx).

Attendance Policy

Students are expected to attend class regularly. Excessive absences will be grounds for disciplinary action, and will be determined on a case-by-case basis. If you are more than 15 minutes late to class or leave class early without notifying the instructor, this will count as an absence. Points will be deducted from a student's final course grade for absences (1-2abs. = .5 each, 3-5 abs. = .75 each, 6-7 abs. = 1 point each).

AVID

This course has been identified as a course by Career, Technical, and Workforce Education as one in which teaching and learning strategies adopted by AVID will be implemented. As a student in the legal program, you will be expected to develop an understanding of the strategies, to model the strategies, to maintain fidelity of

implementation, and to examine how these strategies may impact your effectiveness as a professional in your chosen area of occupation, either through coursework or practicum experience as outlined by the course instructor.

Grade Inquiry Policy

It is the responsibility of the individual taking this course to maintain accurate track of assignment submissions and grades. There will be opportunities during the semester to meet with the instructor to discuss your academic progress. Contact the instructor to schedule an appointment. Class time will not be used for grade inquiries. All grades are final.

General Course Requirements

- Attend class and participate.
- Contribute and cooperate with civility.
- Submit assignments on time. Late work will not be accepted. Medical and/or family circumstances that warrant an extension on assignments need to be presented to the instructor. Extensions will be allowed at the instructor’s discretion.
- The final exam is comprehensive and based on the ARRT format.

Incomplete Policy

An ‘Incomplete’ grade may be given only if:

The student has passed all completed work

If he/she has completed a minimum of 75% of the required coursework. A grade of an “I” will only be assigned when the conditions for completions have been discussed and agreed upon by the instructor and the student.

Course Schedule

(Tentative and Subject to Change)

Item (Name)	Type	Description
Chapter 1 – Essential Concepts of Radiologic Science, pp 2-25 Explores the basic concepts of the science and technology of x-ray imaging to include the study of matter, energy, the electromagnetic spectrum, and ionizing radiation.	Lecture/Discussion of Key Points	Complete Worksheets & Review Questions
Chapter 2 – The Structure of Matter, pp 26-43 Delves into the study of matter, the atom to include all characteristics of the atom important in radiology such as binding energy, individual electron energy, valence, covalent and ionic bonds, etc.	Lecture/Discussion of Key Points	Complete Worksheets & Review Questions
Chapters 1 & 2 Examination		Quiz

Chapter 3 – Electromagnetic Energy, pp 44-59

Discusses the electromagnetic spectrum, identifies the properties of photons, explains and allows for work with inverse square law; and defines wave and quantum theory.

Lecture/Discussion
of Key Points Complete
Worksheets &
Review Questions

Chapter 4 – Electricity, Magnetism, and Electromagnetism, pp 60-81

Briefly introduces the basic concepts of electricity and magnetism needed for further study of the x-ray imaging system and its various components to include electrostatics and electrodynamics and electromagnetic induction and describes the nature of magnetism by discussing the laws that govern magnetic fields which is essential to understanding the function of several components of the x-ray imaging system.

Lecture/Discussion
of Key Points Complete
Worksheets &
Review Questions

Chapters 3 & 4 Examination

Quiz

Chapter 5 – The X-ray Imaging System, pp 84-103

Describes the components of the operating console of an x-ray machine that is used to control the voltage applied to the x-ray tube, the current through the x-ray tube and the exposure time, discusses the high-voltage generator which contains the high-voltage step-up transformer and the rectification circuit in its many forms, the low-voltage step-down transformer, and finally, combines all components into a single complete circuit diagram.

Lecture/Discussion
of Key Points Complete
Worksheets &
Review Questions

Chapter 6 – The X-ray Tube, pp 104-122

Explanation of the external components of the x-ray tube and the internal structure of the x-ray tube to include line focus principle, anode heel effect, and causes and prevention of x-ray tube failure with calculation of heat units and the use of tube rating charts, anode cooling curve charts and housing cooling curve charts.

Lecture/Discussion
of Key Points Complete
Worksheets &
Review Questions

Chapter 5 & 6 Examination		Quiz
Chapter 7 – X-ray Production, pp 123-135	Lecture/Discussion of Key Points	Complete Worksheets & Review Questions
<p>Explain the interactions of the projectile electrons that are accelerated from the cathode to the anode within the x-ray tube resulting in the production of heat and x-rays, the interactions that produce two types of x-rays, Bremsstrahlung and Characteristic, the x-ray emission spectrum and factors that affect it, and a review of two types of mechanical energy, potential and kinetic, and their involvement in x-ray production.</p>		
Chapters 7 Examination		Quiz
Chapter 25 – Fluoroscopy, pp 401-416	Lecture/Discussion of Key Points	Complete Worksheets & Review Questions
<p>Identifies the components to include the input phosphor, photocathode, electrostatic focusing lenses, anode, and output phosphor of an image intensifier tube, learn to calculate flux gain, brightness gain, minification gain and the conversion factor, an explanation of scotopic (rod) and photopic (cone) vision, fluoroscopic technique, veiling glare, contrast resolution, vignetting, spatial resolution and multifield image intensification to include field of view, magnification factor, automatic brightness control (ABC), and the possible modes of operation with an image-intensifier tube such as spot-film camera, television monitor and cine camera.</p>		
Chapter 21 Examination		Quiz
Final Examination – Comprehensive Final Examination		Quiz

Institutional Core Objectives (ICOs)

Description of Institutional Core Objectives (ICO's)

Given the rapid evolution of necessary knowledge and skills and the need to take into account global, national, state, and local cultures, the core curriculum must ensure that students will develop the essential knowledge and skills they need to be successful in college, in a career, in their communities, and in life. Therefore, with the assistance of the Undergraduate Education Advisory Committee, the Coordinating Board has approved guidelines for a core curriculum for all undergraduate students in Texas.

Through the application and assessment of objectives within the institution's core curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world; develop principles of personal

and social responsibility for living in a diverse world; and advance intellectual and practical skills that are essential for all learning. Appropriate Odessa College faculty periodically evaluates all of the courses listed in the descriptions on the following pages of this catalog and keys them to Odessa College's Institutional Core Objectives (ICOs), as defined by the Texas Higher Education Coordinating Board (THECB). (Source: Odessa College Catalog of Courses 2012-2013, page 73)

Odessa College's Institutional Core Objectives (ICOs):

Critical Thinking Skills - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

Communication Skills - to include effective development, interpretation and expression of ideas through written, oral and visual communication

Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Teamwork - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Personal Responsibility - to include the ability to connect choices, actions and consequences to ethical decision-making

Social Responsibility - to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

Course Objectives

End of Course Outcomes

The student must differentiate between conventional and digital equipment; explain the physics of x-ray production; describe x-ray circuits; and relate conventional and digital equipment components to the imaging process.

Learning Outcomes

Outcome	ICO
	Critical Thinking Skills - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
	Communication Skills - to include effective development, interpretation and expression of ideas through written, oral and visual communication
Students must manipulate data to solve equations involving Ohm's Law and series and parallel circuits.	Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
	Teamwork - to include the ability to consider different points of view and to work effectively with others to

	support a shared purpose or goal
	Personal Responsibility - to include the ability to connect choices, actions and consequences to ethical decision-making
	Social Responsibility - to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

Odessa College Policies

Academic Policies

Note that the OC Student Handbook states (page 32) that “[i]n cases of academic dishonesty, the instructor has the authority to impose appropriate scholastic penalties. Complaints or appeals of disciplinary sanctions may be filed in accordance with the college due process procedure. Copies of the college due process procedure are available in the office of The Director of Student Life (CC104).”

For more information on your rights and responsibilities as a student at Odessa College, please refer to the following: The 411 of OC: Student Handbook 2012-2013; Student Rights & Responsibilities
<http://www.odessa.edu/dept/studenthandbook/handbook.pdf>

Scholastic Dishonesty

Scholastic dishonesty shall constitute a violation of these rules and regulations and is punishable as prescribed by board policies. Scholastic dishonesty shall include, but not be limited to, cheating on a test, plagiarism and collusion.

"Cheating on a test" shall include:

- Copying from another student's test paper
- Using test materials not authorized by the person administering the test.
- Collaborating with or seeking aid from another student during a test without permission from the test administrator.
- Knowingly using, buying, selling, stealing or soliciting, in whole or in part, the contents of an unadministered test.
- The unauthorized transporting or removal, in whole or in part, of the contents of the unadministered test.
- Substituting for another student, or permitting another student to substitute for one's self, to take a test.
- Bribing another person to obtain an unadministered test or information about an unadministered test.
- "Plagiarism" shall be defined as the appropriating, buying, receiving as a gift, or obtaining by any means another's work and the unacknowledged submission or incorporation of it in one's own written work.
- "Collusion" shall be defined as the unauthorized collaboration with another person in preparing written work for fulfillment of course requirements. (Source: Odessa College Student Handbook 2012-2013, page 29-30)

Special Populations/Disability Services/Learning Assistance

Odessa College complies with Section 504 of the Vocational Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. If you have any special needs or issues pertaining to your access to and participation in this or any other class at Odessa College, please feel free to contact me to discuss your concerns. You may also call the Office of Disability services at 432-335-6861 to request assistance and accommodations.

Odessa College affirms that it will provide access to programs, services and activities to qualified individuals with known disabilities as required by Section 504 of the Rehabilitation Act of 1973 and Title II of the Americans with Disabilities Act of 1990 (ADA), unless doing so poses an undue hardship or fundamentally alters the nature of the program or activity. Disabilities may include hearing, mobility or visual impairments as well as hidden disabilities such as chronic medical conditions (arthritis, cancer, diabetes, heart disease, kidney disorders, lupus, seizure disorders, etc.), learning disabilities or psychiatric or emotional disabilities. A student who comes to Odessa College with diagnosed disabilities which may interfere with learning may receive accommodations when the student requests them and submits proper documentation of the diagnosis. A Request for Accommodations form and guidelines for beginning the request process are available in the OC Help Center or on the Odessa College web site at <http://www.odessa.edu/dept/counseling/disabilities/index.htm>. The college strives to provide a complete and appropriate range of services for students with disabilities such as assistance with testing, registration, information on adaptive and assistive equipment, tutoring, assistance with access and accommodations for the classroom where appropriate. For information regarding services, students with disabilities should contact the Office of Disability Services in the OC Help Center located in Room 204 of the Student Union Building or call 432-335-6433. (Source: Odessa College Catalog of Courses 2012-2013, page 52)

Dropping a Course or Withdrawing from College

Students wishing to drop a non-developmental course may do so online using WebAdvisor, at the Wrangler Express, or Registrar's Office. A student wishing to drop a developmental course or withdraw from college should obtain a drop or withdrawal form from the Wrangler Express or the Registrar's Office. Students are encouraged to consult with instructors prior to dropping a class. Students may not completely withdraw from the college by use of the Web. Students must drop a class or withdraw from college before the official withdrawal date stated in the class schedule. Students who are part of the Armed Forces Reserves may withdraw with a full refund if the withdrawal is due to their being ordered into active duty. A copy of the student's orders must be presented to the Registrar's Office at the time of the withdrawal. For details, please contact the Office of the Registrar. No longer attending class does not automatically constitute withdrawal from that class, nor does a student's notification to an instructor that the student wishes to be dropped. Failure of a student to complete the drop/withdrawal process will result in a grade of "F." (Source: Odessa College Catalog of Courses 2012-2013, page 36)

Student Support Services and Technical Support

Blackboard Support

I can't log into my Blackboard Course, who do I contact?

Contact the Student Success Center: 432-335-6673 or online at

https://www.odessa.edu/dept/ssc/helpdesk_form.htm. The SSC can provide you with your Blackboard login name. If you are not sure what your password is, they can reset your password.

I'm having a problem in my Blackboard Course, who do I contact?

For any problem that you have in your online course, always contact your Instructor first. Refer to the Instructor's Contact Information area of the Syllabus for their preferred method of contact and the expected response time.

Additional Blackboard Help Resources:

	Assistance Provided	Available
Blackboard Help for Students	Website with a searchable list of topics on how to navigate and use Blackboard for online courses.	Online Click here.
Blackboard On Demand Learning Center for Students	This website provides an extensive list of short tutorial videos for student activities performed in Blackboard.	Online Click here.
Blackboard Collaborate: First Time Users	If you have never used Blackboard Collaborate before, this website provides a system requirements check, configuration instructions, and training and resources area.	Online Click here.
Blackboard Collaborate: Essentials for Participants	This website provides essential information for Participants of Collaborate sessions. Any Collaborate user, whether first-time or experienced, would benefit from reviewing the information here.	Online Click here.

Student E-mail Support

How do I set up, access, or update my Odessa College Student E-mail account?

Go to this website and follow the directions on the page: <http://www.odessa.edu/gmail/>.

I can't access my student email! I forgot my password!

Contact the Student Success Center: 432-335-6673 or online at

https://www.odessa.edu/dept/ssc/helpdesk_form.htm. They can provide you with assistance in accessing your student email (created by OC) and can also assist with resetting your student email password. Make sure to have your student ID number available!

Your Blackboard login name is associated with your OC created student email account. All Correspondence for this course will be submitted using your Odessa College student email address.

Support for Students with Disabilities

How do I contact the Office of Special Populations?

Main Number	432-335-6861
Campus Location	SUB 204N in the Student Union Building
Email	Becky Rivera-Weiss - brivera@odessa.edu
Website	To find out more about services provided by the Special Populations office, please visit: http://www.odessa.edu/dept/counseling/disabilities/index.htm

Learning Resources Center (LRC; Library)

How do I contact the Learning Resource Center?

Main Number	432-335-6640
FAQ Service	LibAnswers: http://libanswers.odessa.edu
Contact a Specific OC Librarian	Pat Quintero at 432/335-6350 or pquintero@odessa.edu Donna Clark at 432/335-6645 or dclark@odessa.edu Carolyn Petersen at 432/335-6641 or cpetersen@odessa.edu
LRC Services and Guidelines Website	https://www.odessa.edu/dept/library/services/index.htm

Equipment and Services Provided:

The Murry H. Fly Learning Resources Center (LRC) supports the college's curriculum resulting in a primary emphasis on each student's individual study and research needs. The faculty and staff work with the LRC's Technical Services and Public Services Departments in choosing materials to support all college programs. More than 59,000 books, 50,000 electronic books, 350 current periodicals, 6,700 media holdings, eight newspapers, and 60 databases are available to enhance the educational process.

Equipment/Services Available	Used For	Available
Books, videos, CDs	Research	On Campus and Online
Specialized databases not available online for free	Research	On Campus and Online
Magazines, newspapers, & scholarly journals	Research	On Campus and Online
Computers	Research & word processing	On Campus

Selected textbooks for short-term use	Course work	On Campus
Trained staff	Answer "where do I find?"	On Campus and Online
Tutorials	Tips for research strategies	On Campus and Online
Photocopiers, VHS/DVD players, FAX service	For course work	On Campus
Quiet study areas	For course work	On Campus

Success Center (SSC) / AVID Center

How do I contact the Student Success Center?

Appointments are preferred, but walk-ins will be served as soon as possible.

Main Number	432-335-6673
Campus Location	1st floor of the Library
Website with Additional Help and Information	http://www.odessa.edu/dept/ssc/
Live Online Assistance / Chat	Click Here (If no one is currently available, please put your email and question(s) in the appropriate areas of the form and hit 'send.' Your question(s) will be addressed as soon as an SSC staff member becomes available.)

Equipment and Services Provided:

The purpose of the Odessa College Student Success Center is to provide assistance to students in meeting their academic and career goals. The SSC strives to continually provide new and updated resources that will empower all Odessa College students to succeed at OC and beyond.

Equipment/Services Available	Used For	Available
Tutoring by CRLA & Avid trained tutors	Understanding course work and motivation	On Campus and Online Click here for more information.
Student Information Seminars (SIS)	Demo email, Blackboard and SSC resources	On Campus and Online Click here for more information.
Study Skills	Tools needed to succeed	On Campus and Online Click here for more information.
Basic Technology	To navigate classes, email, etc.	On Campus and Online

Plato Web	Practice for TEAS test and basic math, science, etc.	On Campus and Online Click here for more information.
Project T.I.E.	Practice for GED/COMPASS	On Campus and Online Click here for more information.
Student Orientation/Tour	Show individual students where their classes will be. SIS presentation	On Campus
M.O.R.E. Mentoring Program	Networking, tips to navigate college life successfully	On Campus Click here for more information.
Smart thinking	Online tutoring service. Connect with an e-structor and interact with a live tutor.	Online Click here for more information.

Veterans Support

How do I contact the office for Veteran's Outreach?

Main Number	432-335-6833
Campus Location	204M (Help Center) in the Student Union Building
Email	Gloria Rangel - grangel@odessa.edu
Website	To find out more about services provided by the Veteran's Outreach office, please visit: http://www.odessa.edu/dept/counseling/veterans/index.htm