

**D&S Diversified Technologies LLP**

**Headmaster LLP**

**Ohio**

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**General X-Ray Machine Operator (GXMO)**

**Candidate Handbook**

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*UPDATED: March 6, 2023*

Version 6.0

Updates March 6, 2023:

The GXMO vocabulary/terminology words have been updated.

## Contact Information

Questions regarding: • testing process • test scheduling • eligibility to test: ..... <b>(877) 851-2355</b>		
Questions regarding: • Registry status: ..... <b>(614) 466-3543</b>		
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<b><i>Ohio Department of Health</i></b> 246 North High Street Columbus, OH 43215  Email: <a href="https://odh.ohio.gov/wps/portal/gov/odh/home">https://odh.ohio.gov/wps/portal/gov/odh/home</a>	Monday through Friday 8:00AM – 5:00PM (EST)	Phone #: (614) 466-3543

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### Process for Obtaining a GXMO License

Per the Ohio Department of Health (ODH) website, below are the steps to take in order to receive a GXMO license:

#### Step 1

To be eligible to take the GXMO exam, complete a GXMO didactic educational program accredited by the Ohio Department of Health (ODH), or be a student enrolled, that has completed a minimum of one (1) year, in a radiologic technology program of study.

#### Step 2

After completing an accredited GXMO didactic educational program or enrollment in a radiologic technology program of study, the program director will supply you with a GXMO examination registration packet. The original examination registration form must be submitted to D&S Diversified Technologies (D&SDT) by the exam registration deadline on the form. A link to the GXMO Didactic Syllabus Study Guide (under Study Aides) and the testing application Form 1101OX can be printed from D&SDT's GXMO webpage under "Candidate Forms" at:

[http://hdmaster.com/testing/othertesting/ohio\\_xray/OH\\_XRAY\\_Home.htm](http://hdmaster.com/testing/othertesting/ohio_xray/OH_XRAY_Home.htm)

The cost of the examination is listed on the Form 1101OX. To see the available dates and locations for testing, click on the "Test Schedule" button under "Candidate Forms". Further testing registration information is available under "Test Registration Process" on page 3.

Upon completion of the examination, D&SDT will send official examination test results. The examination may be repeated as many times as necessary after successful completion of a didactic educational program.

#### Step 3

Complete at least one GXMO clinical educational program accredited by the Department, specific to the type(s) of procedures performed, or if a student enrolled in a radiologic technology program of study, have your program director complete the Clinical Competency Affidavit form.

#### Step 4

Submit your complete application to the Ohio Department of Health (ODH). You may apply and pay online or mail a hard copy application. A complete application must include the following:

- Application and fee in the amount required by GXMO per ODH, refer to the ODH web site: <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/radiologic-licensure/welcome/>
- Didactic course certificate or college transcript if a student is enrolled in a radiologic technology program of study
- Clinical course certificate(s), or a student enrolled in a radiological technology program of study, the Clinical Competency Affidavit form.
- Examination certificate with a passing score of at least 70 percent (70%).

## Americans with Disabilities Act (ADA)

### ADA Compliance

The Ohio Department of Health (ODH) and D&SDT provide reasonable accommodations for candidates with disabilities or limitations that may affect their ability to perform the GXMO competency examination. Accommodations are granted in accordance with the Americans with Disabilities Act (ADA).

If you have a qualified disability or limitation, you may request special accommodations for examination. Accommodations must be approved by D&SDT in advance of examination. The request for accommodations can be found on the [D&SDT-HEADMASTER webpage](#) or by clicking on this link: [ADA Accommodation Form 1404](#). This form must be submitted to D&SDT with required documentation listed on the second page of the ADA application in order to be reviewed for a special accommodation.

ADA request forms submitted without supporting documentation of a diagnosed disability will not be accepted or reviewed.

**Please allow additional time for your request to be approved.** If you have any questions regarding the ADA review process or specific required documentation, please call D&SDT at (877) 851-2355.

### VA Benefits Reimbursement

D&SDT has been approved by the Department of Veterans Affairs (VA) as an approved testing vendor for the Ohio GXMO exam. If you are an active duty or retired service member you may be eligible for reimbursement of exam fees if funds are available through your GI Bill. To request VA reimbursement of exam fees you must provide your receipt of paying your GXMO exam fees along with a completed VA Application for Reimbursement of Licensing or Certification Test Fees [Form 22-0803](#) to the VA for reimbursement. Additional information regarding the GI Bill can be found on the [VA website](#).

You may request a copy of your testing fee receipt to submit to VA for possible reimbursement by calling D&SDT at (877) 851-2355.

### Updating your License to Operate Digital Equipment

Currently licensed GXMO's may update their license to operate digital equipment by:

Going to "Apply, Amend or Renew" on the ODH website at: <https://odh.ohio.gov/wps/portal/gov/odh/known-our-programs/radiologic-licensure/welcome/>

to add the clinical module(s) you have completed and submit, via fax, mail or upload online, your clinical course certificate(s).

## The GXMO Knowledge Exam

### Test Registration Process

The test registration process with D&SDT is as follows:

- Complete the testing application Form 11010X available under "Candidate Forms" at D&SDT's GXMO webpage at: [http://hdmaster.com/testing/othertesting/ohio\\_xray/OH\\_XRAY\\_Home.htm](http://hdmaster.com/testing/othertesting/ohio_xray/OH_XRAY_Home.htm).
- Provide a copy of your Clinical Course Certificate(s) or college transcripts.

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- Pay the application fee, which can be found on the Form 11010X.
  - Payment can be made by credit card, money order or cashier's check.
  - **Make money orders and cashier's checks payable to D&SDT.**
- Submit your completed testing application with required documentation to D&SDT.
  - Applications must be received in the D&SDT-Headmaster office at least two (2) business days before a desired test date. (Sundays and Holidays are not business days.) Mail applications to D&S Diversified Technologies-Headmaster, P.O. Box 6609, Helena, MT 59602.
  - If paying with a credit card, you may email ([accounting@hdmaster.com](mailto:accounting@hdmaster.com)) or fax (406) 442-3357 your testing application to D&SDT-Headmaster.
    - When faxing your application, there is an additional \$15.00 processing fee.
- A complete listing of testing sites can be found on D&SDT's GXMO webpage under "Candidate Forms" at: [http://hdmaster.com/testing/othertesting/ohio\\_xray/OH\\_XRAY\\_Home.htm](http://hdmaster.com/testing/othertesting/ohio_xray/OH_XRAY_Home.htm).

### Exam Check-In

You should arrive at your confirmed test site between twenty and thirty (20-30) minutes before your exam is scheduled to start. (*For example:* if your test start time is 8:00AM – you need to be at the test site for check-in no later than 7:40AM.)

### Identification

You must bring a **US GOVERNMENT ISSUED, SIGNED, NON-EXPIRED PHOTO ID and a second form of ID**. Examples of government issued, signed, non-expired photo IDs are:

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• Driver's License</li><li>• State ID</li><li>• Military ID (<i>that meet all identification requirements</i>)</li><li>• US Passport<ul style="list-style-type: none"><li>▪ (<i>Foreign Passports and Passport Cards are not acceptable</i>)</li><li>▪ <i>Exception: A Foreign Passport that contains a US VISA is acceptable</i></li></ul></li><li>• Conceal Carry Permit</li></ul> | <p>Examples of a second form of ID are:</p> <ul style="list-style-type: none"><li>• Library card</li><li>• Utility bill</li><li>• Credit/Debit card</li></ul> |
|--|---|

The **FIRST** and **LAST** names listed on the ID and second form of ID presented to the test proctor during sign-in at your test event **MUST EXACTLY MATCH** the FIRST and LAST names that were entered in D&SDT's Ohio GXMO WebEtest© database.

#### Note:

- **You will not be admitted for testing if you do not bring proper/valid identification.**
  - Be sure your US government issued identification and second form of ID is not expired and that both are signed.
  - Check to be positive that both your FIRST and LAST printed names on your photo ID and your second form of ID match your current name of record in D&SDT's Ohio GXMO WebEtest© database.
  - A driver's license or state-issued ID card that has a hole punched in it is NOT VALID and will not be accepted as an acceptable form of ID.
- In cases where names do not match or your ID(s) are not proper/valid, you will not be admitted for testing, you will be considered a NO SHOW and you will forfeit your testing fees and have to reapply for a new test date and repay all required testing fees.

### Testing Policies

The following policies are observed at each test site—

- If you arrive late for your confirmed exam (you need to be at the test site to check in at least 20-30 minutes before your scheduled start time – if your test start time is 8:00AM, you need to be at the test site by 7:40AM at the latest), you will not be admitted to the exam, considered a No Show, and any exam fees paid *will NOT be refunded*.
- If you do not bring valid and appropriate US government issued, non-expired, signed photo ID and your second form of ID, you will not be admitted to the exam, considered a No Show and any exam fees paid *will NOT be refunded*.
  - If the FIRST and LAST printed names on your ID and second form of ID do not match your current name of record, you will not be admitted to the exam, considered a No Show and any exam fees paid *will NOT be refunded*.
- If you NO SHOW for your exam day, any test fees paid *will NOT be refunded*. You must re-pay your testing fees to schedule another exam date.
- **ELECTRONIC DEVICES AND PERSONAL ITEMS:** Cell phones, smart watches, fitness monitors, electronic recording devices, Bluetooth-connected devices and personal items (such as water bottles, purses, briefcases, large bags, study materials, extra books, or papers) are not permitted to be on or near you in either testing room. You will be informed by the testing team of the designated area to place your personal items and electronic devices and you are to collect these items when you complete your test.
  - No wrist watches are allowed to be on or near you in either testing room.
  - All electronic devices must be **turned off**. Smart watches, fitness monitors and Bluetooth-connected devices must be removed from your wrist/body.
  - You are not allowed to have coats or hooded apparel covering your head during testing in the testing rooms.
    - *Candidates with long hair will be asked to pull their hair back to ensure that there is not any blue tooth device present.*
- Anyone caught using any type of electronic recording device during testing will be removed from the testing room(s), have their test scored as a failed attempt, forfeit all testing fees and will be reported to their training program and the Ohio Department of Health (ODH).
- You may, however, use personal devices during your free time in the waiting area.
- You are encouraged to bring a jacket, snack, drink or study material to have during your free time in the waiting area.
- You may not take any notes or other materials from the testing room.
- You are not permitted to eat, drink, smoke, use e-cigarettes or vape during the exam.
- You are not allowed to leave the testing room once the exam has begun **for any reason**. If you do leave during your test event, you will not be allowed back into the testing room to finish your exam.
- If you are discovered causing a disturbance of any kind, engaging in any kind of misconduct or try to take any notes or testing materials from the testing room, you will be dismissed from the exam, your test will be scored as a failed attempt, you will forfeit all testing fees paid and you will be reported to your training program and the Ohio Department of Health (ODH).
- No visitors, guests, pets (including companion animals) or children are allowed.
  - *Service animals with an approved ADA accommodation in place are allowed.*
- D&SDT, test sites and Knowledge Test Proctors are not responsible for candidate personal belongings at the test site.

### Unforeseen Circumstances Policy

If an exam date is cancelled due to an unforeseen circumstance, D&SDT staff will make every effort to contact you using the contact information (phone number/email) we have on file to reschedule you, for no charge, to a mutually agreed upon new test date.

Therefore, you must keep your contact information up to date in case we need to contact you (*\*see examples below for reasons we may not be able to contact you that you are responsible for.*)

If D&SDT is unable to reach you via phone call or email with the information in your record (*\*see examples below*) in the event of an unforeseen circumstance for a test event you are scheduled in to, you will be taken out of the test event and D&SDT will not reschedule you until we hear back from you.

**NOTE:** The \*examples listed below are your responsibility to check and/or keep updated.

- If D&SDT leaves you a message or emails you at the phone number or email in your record and:
  - you do not call us back in a timely manner
  - your phone number is disconnected/mail box is full
  - you do not check your messages in a timely manner
  - you do not check your email or reply to our email in a timely manner
  - your email is invalid or you are unable to access your email for any reason

### Inclement Weather Policy

In the event of inclement weather, you will be expected to attend your schedule exam date unless:

- The county you reside in or the county of the testing site is placed on a weather or other emergency.
  - LEVEL 2 SNOW EMERGENCY: Roadways are hazardous with blowing and drifting snow. Roads may also be very icy. Only those who feel it is necessary to drive should be out on the roads. Motorists should use extreme caution.
  - LEVEL 3 SNOW EMERGENCY: All roadways are closed to non-emergency personnel. No one should be driving during these conditions unless it is absolutely necessary to travel or a personal emergency exists. Those traveling on the roads may subject themselves to arrest.
- The test site closes.
- The test observer cancels the test event.
- There is an accident due to weather or other cause on your route to the test site, in which case:
  - Documentation from the Department of Transportation Services or a Police report is required within 3 business days of your scheduled exam day to qualify for a free reschedule.

If the above listed circumstances are not met, failure to attend your scheduled test date will result in a NO SHOW status and any exam fees paid *will NOT be refunded*.

### Security

If you refuse to follow directions, use abusive language or disrupt the examination environment, your test will be stopped and scored as a failed attempt. You will be dismissed from the testing room and will forfeit any testing fees paid and a report of your behavior will be given to your training program and to the Ohio Department of Health (ODH).

Anyone who removes or tries to remove test material or takes notes or information from the test site will be reported to their training program and ODH and is subject to prosecution to the full extent of the law. Your test

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will be scored as a failed attempt and you will forfeit any testing fees paid. You will not be allowed to retest for a minimum period of six (6) months.

If you give or receive help from anyone during testing (which also includes the use of any electronic recording devices such as cell phones, smart watches, etc. or browsing to other sites during your exam), your test will be stopped and scored as a failed attempt. You will be dismissed from the testing room and will forfeit any testing fees paid. You will be reported to your training program and ODH and you will not be allowed to retest for a minimum period of six (6) months.

### Instructions for the Knowledge Test

Test instructions for the knowledge test will be provided in written and oral format in the waiting area when you sign-in for your test. Audio and PDF versions are also available anytime from your smart phone via the link on D&SDT's GXMO website at [http://hdmaster.com/testing/othertesting/ohio\\_xray/OH\\_XRAY\\_Home.htm](http://hdmaster.com/testing/othertesting/ohio_xray/OH_XRAY_Home.htm). These instructions detail the process and what you can expect during your exam. Please read through the instructions (or listen to them on your smart phone) **before** entering the knowledge test room. The instructions will be left in the waiting area during testing for you to refer to throughout your time at the test site. The Knowledge Test Proctor will ask you questions about the instructions you read when you enter the knowledge test room.

### Reschedule | Refund of Testing Fees (Cancellation) | No Show Policies

**Note:** All documentation regarding reschedules or no shows must be emailed ([ohio@hdmaster.com](mailto:ohio@hdmaster.com)) or faxed (419) 422-8328) to D&SDT. Reschedule, no show or request for refund (cancellation) documents (see document requirements below under Refund of Testing Fees) sent to the Ohio Department of Health (ODH) **will not be valid**.

#### Reschedules

All reschedules must be requested **one (1) business day** prior to the scheduled testing date, excluding Saturdays, Sundays and Holidays.

- **Example:** If you are scheduled to take your exam on a Saturday, Sunday or Monday, you would need to reschedule by close of business (D&SDT is open until 8:00PM Eastern Standard time Monday-Friday) the Thursday before your scheduled exam.

Scheduled test date is on a:	Reschedule by D&SDT's close of business:
Monday	On the previous: Thursday
Tuesday	On the previous: Friday
Wednesday	On the previous: Monday
Thursday	On the previous: Tuesday
Friday	On the previous: Wednesday
Saturday	On the previous: Thursday
Sunday	On the previous: Thursday

**Please note: Reschedules will not be granted less than one (1) full business day prior to a scheduled test date.**

#### Refund of Testing Fees Paid

Requesting a refund of testing fees paid is different than rescheduling a test date. Requesting a refund means that you are not interested in taking the Ohio GXMO exam at all.



### Scheduled in a Test Event

- 1) If you are scheduled in a test event, a refund request of testing fees paid must be made by filling out and submitting the [Refund Request Fillable Form 1405](#) on D&SDT-Headmaster's main webpage at [www.hdmaster.com](http://www.hdmaster.com) at least **one (1) full business day** prior to your scheduled test event (excluding Saturdays, Sundays and Holidays.) No phone calls will be accepted.
  - **Example:** If you are scheduled to take your exam on a Saturday, Sunday or Monday, you would need to request a refund by filling out and submitting the Refund Request Fillable Form on the D&SDT-Headmaster main webpage at [www.hdmaster.com](http://www.hdmaster.com) by close of business the Thursday before your scheduled exam. D&SDT is open until 8:00PM Eastern time, Monday through Friday, excluding Holidays.
- 2) Refund requests made in the required time frame qualify for a full refund of any testing fees paid minus a \$35 refund processing fee.
- 3) Refund requests must be made within thirty (30) days of payment of testing fees with D&SDT. Any requests for refunds made beyond the 30 days of payment of testing fees with D&SDT *will not be issued*.

### Not Scheduled in a Test Event

- 1) Refund requests must be made within thirty (30) days of payment of testing fees with D&SDT. Any requests for refunds made beyond the 30 days of payment of testing fees with D&SDT *will not be issued*.
- 2) A refund request of testing fees paid must be made by filling out and submitting the [Refund Request Fillable Form 1405](#) on D&SDT-Headmaster's main webpage at [www.hdmaster.com](http://www.hdmaster.com). No phone calls will be accepted.
- 3) Refund requests made in the required time frame qualify for a full refund of any testing fees paid minus a \$35 refund processing fee.

### No Shows

If you are scheduled for your exam and do not show up without notifying D&SDT at least one (1) full business day prior to your scheduled testing event, *excluding* Saturdays, Sunday, and Holidays, or if you are turned away for lack of proper identification, proper attire, or any other reason to deem you ineligible to test, you will be considered a **NO SHOW**. You will forfeit all fees paid and must submit a new testing fee to schedule yourself into a new test event.

These fees partially offset D&SDT cost incurred for services requested and resulting work that is performed. If a reschedule or refund request is not received before the one (1) full business day preceding a scheduled test event, *excluding* Saturdays, Sundays, and Holidays (see examples under Reschedules and Refund of Testing Fees Paid), a NO SHOW status will exist and you will forfeit your testing fees and must repay the full testing fee to secure a new test event.

### No Show Exceptions

Exceptions to the No Show status exist; if you are a No Show for any test component for any of the following reasons, a free reschedule will be authorized to the remitter of record providing **the required documentation is received within the appropriate time frames outlined below:**

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- **Car breakdown or accident:** D&SDT must be contacted within one business day via phone call, fax or email and a tow bill, police report or other appropriate documentation must be submitted within **three (3) business days** of the exam date. If we do not receive proof within the 3-business day time frame you will have to pay as though you were a NO SHOW.
- **Weather or road condition related issue:** D&SDT must be contacted within one business day via phone call, fax or email and a road report, weather report or other appropriate documentation must be submitted within **three (3) business days** of the exam date. If we do not receive proof within the 3-business day time frame you will have to pay as though you were a NO SHOW.
- **Medical emergency or illness:** D&SDT must be contacted within one business day via phone call, fax or email and a doctor’s note must be submitted within **three (3) business days** of the missed exam date. If we do not receive proof within the 3-business day time frame you will have to pay as though you were a NO SHOW.
- **Death in the family:** D&SDT must be contacted within one business day via phone call, fax or email and an obituary for **immediate family only** submitted within **seven (7) business days** from a missed exam date. If we do not receive proof within the 7-business day time frame you will have to pay as though you were a NO SHOW. (Immediate family includes parent, grand and great-grand parent, sibling, children, spouse or significant other.)

### Test Results

After you have completed the Knowledge Test, your test results will be officially scored and double checked. Official test results are available to you the day tests are scored. You will be able to access your test results online at [http://hdmaster.com/testing/othertesting/ohio\\_xray/OH\\_XRAY\\_Home.htm](http://hdmaster.com/testing/othertesting/ohio_xray/OH_XRAY_Home.htm).

You will be emailed your test results to the email in your record and/or a copy of your test results can be printed from D&SDT’s GXMO webpage any time after your test has been officially scored. Your device must have an RTF reader to open emailed test results. Your test results will also be sent to your training program.


### Checking Test Results On-Line

To check your test results online, go to the Ohio GXMO webpage at: [http://hdmaster.com/testing/othertesting/ohio\\_xray/OH\\_XRAY\\_Home.htm](http://hdmaster.com/testing/othertesting/ohio_xray/OH_XRAY_Home.htm), click on “On-line Test RESULTS”:

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Candidate Forms
<a href="#">Testing Application Form 1101</a>
<a href="#">Test Schedule</a>
<a href="#">Candidate Log-in</a>
<a href="#">When Am I Scheduled to Test?</a>
<a href="#">ADA Accommodation 1404</a> <a href="#">Third Column Main Page</a>
<a href="#">On-line Test RESULTS</a>

- |                                |   |
|--------------------------------|---|
| 1) Type in your test ID number | 3) Type in your birth date              |
| 2) Type in your test date      | 4) Click on Submit Score Report Request |

  
 PO Box 418  
 Findlay, OH 45839  
 Phone: (877)851-2355  
 Fax: (419)422-8328

| Headmaster |

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Directions

To receive your online score report you must complete the fields as indicated below using the **required formats**. If you are certain that you have completed the fields correctly, and you do not receive a score report, it is likely that your tests have not been scored. Electronic tests require 1 day for official scoring, while paper tests require 1 to 4 days depending on mail service. If you do not receive a score report, please return at a later date and submit your request.

**Important Note:** Scores will be available **after 6:00 PM eastern time** on the day they are scored. (electronic tests are scored the next business day and paper tests scored within 3-5 business days after testing.)

Score Report Login

Required Login Fields

Please enter your **social security # or test ID**

Please enter the **test date**  (mm/dd/yyyy)

Please enter your **birthdate**  (mm/dd/yyyy)

[Submit Score Report Request](#)

1  
2  
3  
4

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### Test Attempts

You have **unlimited attempts** after successful completion of a didactic educational program to pass the Knowledge Test.

### The Knowledge Exam

The Knowledge Test Proctor (KTP) will hand out materials and give instructions for taking the Knowledge Test. You will have a maximum of ninety (90) minutes to complete the 60-question multiple choice Knowledge Test. After forty-five (45) minutes have elapsed, you will be told when fifteen (15) minutes remains. You may not ask questions about the content of the Knowledge Test (such as “What does this question mean?”).

You must have a score of **70%** or better to pass the Knowledge Test.

Electronic testing in WebETest®, using internet connected devices, is utilized at the GXMO test sites in Ohio. The Knowledge Test will be displayed on a screen for you to read and key/click/tap in your answers. Testing electronically (online) with WebETest® allows no later than next business day official scoring of tests.

Your Knowledge Test Proctor (KTP) will have scrap paper available for math related questions. The scrap paper must be turned in with your test when finished. All test materials must be left in the testing room. Anyone who takes or tries to take materials or information from the testing room is subject to prosecution to the full extent of the law and will be reported to their training program and to the Ohio Department of Health and will not be allowed to take the test again without ODH approval.

## Knowledge Test Content

The knowledge test consists of sixty (60) multiple choice items/questions. Questions are selected from subject areas based on the ODH approved test plan and include questions from all the required categories. The subject areas and number of items are as follows:

### Knowledge Test Subject Areas:

SUBJECT AREA	NUMBER OF QUESTIONS
Digital Imaging	5
Image Quality	4
Operation Safety	6
Patient Assessment	3
Patient Safety	6
Primary Radio	2
Radiation Safety	9
Radiographic Equipment	7
Technique	7
X-Ray Beam	2
X-Ray Ionization	4
X-Ray Tube Design	5

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### GXMO Vocabulary/Terminology

artifacts	general safety principles	post-processing
atomic structure	genetic-fetal effects	practical considerations
attenuation	geometric factors	practical considerations CR
automatic exposure control	grid contrast	pregnant workers
basic biologic effects of radiation exposure	grids	properties of x-rays
beam quality	HIPAA	public dose limits
beam restrictors	ID	radiation protection
beam restrictors contrast	image brightness	radiation safety
brightness	image characteristics	remnant radiation
contrast	image contrast	scatter control
contrast resolution	image evaluation	scatter reduction
CR	image scatter reduction	scope of practice
CR imaging	imaging plate	sharpness of detail
definition of x-ray beam intensity	imaging plates	shielding
differential attenuation	interactions with matter	sources of radiation
digital advantages	inverse square law	subject contrast
digital basics	ionization	survey and monitoring requirements
digital image: CR	kilovoltage	technique charts
digital post-processing	Law of Bergonie and Tribondeau	types of personal dosimeters
display qualities	legal documentation	units of measure
distortion	monitoring	visibility of detail
dose limits	motion	visibility of structure
dosimeters	occupational dose limits	x-ray beam quality
dosimetry	occupational protection	x-ray beam quantity
early/late effects	patient history	x-ray production
electromagnetic spectrum	patient ID	x-ray tube
exposure index	patient safety	x-ray tube construction
filtration	personnel shielding and protective barriers	
general safety	pixel size	

### NOTES
