Medical Terminology
Language for Healthcare

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Medical Terminology: Language for Health Care, Third Edition, is designed for you, the students in the allied health curriculum, who need to know the language of health care. Its purpose is to help you succeed in your chosen health care careers by familiarizing you with how medical words are formed and by providing a systematic learning structure.

Before this section takes you through a short, instructive journey on how the book is set up and how it will work best for you, take the time to go through some general tips for success in school.

How Can I Succeed in This Class?

If you’re reading this, you’re on the right track.

“You are the same today that you are going to be five years from now except for two things: the people with whom you associate and the books you read.”

Charles Jones

Right now, you’re probably leafing through this book feeling just a little overwhelmed. You’re trying to juggle several other classes (which probably are equally daunting), possibly a job, and on top of it all, a life.

This special section —To the Student—has been designed specifically to help you focus. It’s here to help you learn how to manage your time and your studies to succeed.

Start Here

It’s true—you are what you put into your studies. You have a lot of time and money invested in your education; you’ve been planning since high school, working an extra job or through summer vacations to save your money. Don’t blow it now by only putting in half of the effort this class requires. Succeeding in this class (and life) requires:

- a commitment—of time and perseverance
- knowing and motivating yourself
- getting organized
- managing your time

This specially designed section will help you learn how to be effective in these areas, as well as offer guidance in:

- getting the most out of your class
- thinking through—and applying—the material
- getting the most out of your textbook
- finding extra help when you need it
A Commitment—of Time and Perseverance

Learning—and mastering—takes time and patience. Nothing worthwhile comes easily. Be committed to your studies and you will reap the benefits in the long run.

Consider this: your education is building the foundation for your future—a future in your chosen profession. Sloppy and hurried work now will only lead to lack of success later. Two or four years of committed education time now is nothing compared to the lifetime that awaits you.

Note: A good rule of thumb is to allow a minimum of 2 hours of study time each week for every hour you spend in class.

For instance, 3 hours of class deserve 6 hours of weekly study time. If you set aside time each day to study, you will be investing a little time every day, including the weekend. Study time includes completing exercises, reading the text, practicing words, listening to recordings, and reviewing notes.

Why Study Medical Terminology?

If you were moving to a foreign country where very few people spoke English, you would make every effort to learn the language of that country. You have chosen a course of study in allied health or health care and you will need to know the language that is used in that discipline. Medical terminology covers the specifics words and phrases you will need to learn to function effectively and understand the “language” of health care.

Whether you deal with the clinical side or the administrative side, everyone involved in health care uses various terms to describe certain diseases, procedures, and office practices. Many of the terms used in health care are “built up,” which means they are formed from word parts. In this text, you will learn how to understand words by breaking them down into parts. Although learning a new “language” basically involves memorization, this text gives you tools to help you learn large numbers of terms without memorizing each one. Take advantage of all the study elements within the text, on the student CD-ROM, and on the Web site to help you become a proficient participant in allied health.

Knowing and Motivating Yourself

What type of a learner are you? When are you most productive? Know yourself and your limits and work within them. Know how to motivate yourself to give your all to your studies and achieve your goals. Quite bluntly, you are the one who will benefit most from your success. If you lack self-motivation and drive, you will be the first person to suffer.

Know yourself: There are many types of learners, and no right or wrong way of learning. Which category do you fall into?

**Visual Learner**—You respond best to “seeing” processes and information. Particularly focus on text illustrations and charts, course handouts. Check to see if there are animations on the course or text Web site to help you. Also, consider drawing diagrams in your notes to illustrate concepts.

**Auditory Learner**—You work best by listening to—and possibly tape recording—the class lecture and by talking information through with a study partner. Your study sessions should include a flash card drill with a study partner or family member.
**Tactile/Kinesthetic Learner**—You learn best by being “hands on.” You’ll benefit by applying what you’ve learned during class time. Think of ways to apply your critical thinking skills in a variety of situations. Perhaps a text Web site or interactive CD-ROM will also help you.

Identify your own personal preferences for learning and seek out the resources that will best help you with your studies. Also, learn by recognizing your weaknesses and try to compensate for them while you work to improve them.

**Getting Organized**

It’s simple, yet it’s fundamental. It seems the more organized you are, the easier things come. Take the time before your course begins to look around and analyze your life and your study habits. Get organized now and you’ll find you have a little more time—and a lot less stress.

- Find a calendar system that works for you. The best kind is one that you can take with you everywhere. To be truly organized, you should integrate all aspects of your life into this one calendar—school, work, leisure. Some people also find it helpful to have an additional monthly calendar posted by their desk for “at a glance” dates and to have a picture of what’s to come. If you do this, be sure you are consistently synchronizing both calendars so you don’t miss anything. More tips for organizing your calendar can be found in the time management discussion on the next page.
- By the same token, keep everything for your course or courses in one place—and at your fingertips. A three-ring binder works well because it allows you to add or organize handouts and notes from class in any order you prefer. Incorporating your own custom tabs helps you flip to exactly what you need at a moment’s notice.
- Find your space. Find a place that helps you be organized and focused. If it’s your desk in your room or elsewhere in your home, keep it clean. Clutter adds confusion, stress, and wastes time. Or perhaps your “space” is at the library. If that’s the case, keep a backpack or bag that’s fully stocked with what you might need—your text, binder or notes, pens, highlighters, Post-its, phone numbers of study partners (hint: a good place to keep phone numbers is in your “one place for everything calendar”).

**A Helpful Hint**—add extra “padding” into your deadlines to yourself. If you have a test on Friday, set a goal for yourself to have most of the studying done by Wednesday. Then, take time on Thursday to look over the work again, with a fresh eye. Review anything you had trouble remembering and be ready for the test on Friday.

**Managing Your Time**

Managing your time is the single most important thing you can do to help yourself. And, it’s probably one of the most difficult tasks to successfully master.

You are taking this course because you want to succeed in life. You are preparing for a career. In school, you are expected to work much harder and to learn much more than you ever have before. To be successful you need to invest in your education with a commitment of time.
How Time Slips Away

People tend to let an enormous amount of time slip away from them, mainly in three ways:

1. **Procrastination**, putting off chores simply because you don’t feel in the mood to do them right away
2. **Distraction**, getting sidetracked by the endless variety of other things that seem easier or more fun to do, often not realizing how much time they eat up
3. **Underestimating the value of small bits of time**, thinking it’s not worth doing any work because you have something else to do or somewhere else to be in 20 minutes or so.

We all lead busy lives. But we all make choices as to how we spend our time. Choose wisely and make the most of every minute you have by implementing these tips.

- **Know yourself and when you’ll be able to study most efficiently.** When are you most productive? Are you a late nighter? Or an early bird? Plan to study when you are most alert and can have some uninterrupted time. This could include a quick 5-minute review before class or a one-hour problem solving study session with a friend.
- **Create a set study time for yourself daily.** Having a set schedule for yourself helps you commit to studying, and helps you plan instead of cram.
- **Organize all of your activities in one place.** Find—and use—a planner that is small enough to carry with you everywhere. This can be a $2.50 paper calendar or a more expensive electronic version. They all work on the same premise.
- **Less is more. Schedule study time using shorter, focused blocks with small breaks.** Doing this offers two benefits: 1. You will be less fatigued and gain more from your effort, and 2. Studying will seem less overwhelming and you will be less likely to procrastinate.
- **Do plan time for leisure, friends, exercise, and sleep.** Studying should be your main focus, but you need to balance your time—and your life.
- **Make sure you log your projects and homework deadlines in your personal calendar.**
- **“Plot” your assignments on your calendar or task list.** If you have a report, for instance, break the assignment down into smaller targets. For example, set a goal for a first draft, second draft, and final copy.
- **Try to complete tasks ahead of schedule.** This will give you a chance to carefully review your work before you hand it in (instead of at 1 a.m. when you are half awake). You’ll feel less stressed in the long run.
- **Prioritize!** In your calendar or planner, highlight or number key projects; do them first, and then cross them off when you’ve completed them. Give yourself a pat on the back for getting them done!
- **Review your calendar and reprioritize daily.**
- **Try to resist distractions by setting and sticking to a designated study time (remember your commitment!).** Distractions may include friends, surfing the Internet, or even a pet lizard.
- **Multitask when possible** — You may find a lot of extra time you didn’t think you had. Review material in your head while walking to class, doing laundry, or during “mental down time.” (Note—mental down time does NOT mean in the middle of lecture.)
**Note:** Plan to study and plan for leisure. Being well balanced will help you focus when it is time to study.

**Tip:** Try combining social time with studying (a study partner) or social time with mealtime or exercise (dine or work out with a friend). Being a good student doesn’t mean you have to be a hermit. It does mean you need to know how to smartly budget your time.

**Learn to Manage or Avoid Time Wasters**

**DON’T**
- Don’t let friends manage your time

**Tip:** Kindly ask, “Can we talk later?” when you are trying to study; this will keep you in control of your time without alienating your friends.
- Don’t get sucked into the Internet

It’s easy to lose hours in front of the computer surfing the web. Set a time limit for you self and stick to it.

**DO**
- Do use small bits of time to your advantage

**Example:** Arrive to class five minutes early and review notes. Review your personal calendar for upcoming due dates and events while eating meals or waiting for appointments.
- Do balance your life—sleep, study, and leisure are all important. Keep each in balance.

**Getting the Most out of Classes**

Believe it or not, instructors want you to succeed. They put a lot of effort into helping you learn and preparing their classes. Attending class is one of the simplest, most valuable things you can do to help yourself. But it doesn’t end there; getting the most out of your classes means being organized. Here’s how:

**Prepare Before You Go to Class**

Really! You’ll be amazed at how much better you understand the material when you preview the chapter before you go to class. Don’t feel overwhelmed by this suggestion. One tip that may help you—plan to arrive to class 5-15 minutes before lecture. Bring your text with you and skim the chapter before class begins. This will at the very least give you an overview of what may be discussed.

**Be a Good Listener**

Most people think they are good listeners, but few really are. Are you?

Obvious, but important points to remember:
- You can’t listen if you are talking.
- You aren’t listening if you are daydreaming.
- Listening and comprehending are two different things. If you don’t understand something your instructor is saying, ask a question or jot a note
and visit the instructor after hours. Don’t feel dumb or intimidated; you probably aren’t the only person who “doesn’t get it.”

**Take Good Notes**

- Use a standard size notebook, or better yet, a three-ring binder with loose leaf notepaper. The binder will allow you to organize and integrate your notes and handouts, make use of easy-to-reference tabs, etc.
- Use a standard black or blue ink pen to take your initial notes. You can annotate later using a pencil, which can be erased if need be.
- Start a new page for each class or note-taking session (yes—you can and should also take notes from your textbook).
- Label each page with the date and a heading for each day.
- Focus on main points and try to use an outline format to take notes to capture key ideas and organize sub-points.
- Leave lots of white space in your note-taking. A solid page of notes is difficult to study.
- Review and edit your notes shortly after class—at least within 24 hours to make sure they make sense and that you’ve recorded core thoughts. You may also want to compare your notes with a study partner later to make sure neither of you have missed anything.

**Get a Study Partner**

Having a study partner has so many benefits. First, he/she can help you keep your commitment to this class. By having set study dates, you can combine study and social time, and maybe even make it fun! In addition, you now have two sets of eyes and ears and two minds to help digest the information from class and from the text. Talk through concepts, compare notes, and quiz each other.

**An Obvious Note:** Don’t take advantage of your study partner by skipping class or skipping study dates. You soon won’t have a study partner—or a friend!

**Helpful Hint:** Take your text to class, and keep it open to the topics being discussed. You can take brief notes in your textbook margin or reference textbook pages in your notebook to help you study later.

**How to Study for an Exam**

- rereading is not studying
- be an active learner—
  - Read.
  - Be an active participant in class; ask questions.
  - Finish reading all material—text, notes, handouts—at least three days prior to the exam.
- Three days prior to the exam, set aside time each day to do self-testing, practice problems, review notes, and use critical thinking skills to understand the material.
- Analyze your weaknesses, and create an “I don’t know this yet” list. Focus on strengthening these areas and narrow your list as you study.
- Create your own study tools such as flash cards and checklists and practice defining key terms.
• Make up a mock test. If you were the instructor, what questions would you put on the test? You will be surprised at how accurate you will be.

Useful tools to help: the end-of-chapter reviews, questions and practice problems; text Web site; student CD-ROM; and your study partner.

**Very Important**

Be sure to sleep and eat well before the exam.
If you are determined to fail, just follow these few simple instructions:

1. Skip class, or if you do attend, arrive fashionably late.
2. Don’t buy the book, or if you buy it, don’t read it.
3. Don’t bother studying if you have to be somewhere else in 20 minutes; that’s not enough time to get anything done.
4. Big test coming up? Beat the stress by relaxing with friends, going out for a few beers, or hanging out in an Internet chat room. Be sure to complain to your chat room friends about how there’s not way you can pass the test tomorrow.
5. Don’t ask questions in class; you’re probably the only one who doesn’t know the answer, and everyone else will think you’re stupid.
6. Don’t visit the instructor in his or her office; instructors don’t want to be bothered.
7. If you miss a class, trust your friends’ notes to be complete and accurate.
8. Be sure to pull an all-nighter before the exam; you don’t have time to sleep.
9. Don’t strain your brain trying to do the chapter review. Look up the answers and fill them in. You can fool your friends into thinking you’re really smart (as long as they don’t see your test grade).
10. When you study with friends, have a good time—chat about things unrelated to your study topic.
11. The time to begin studying for an exam is the day before the test. Four hours ought to be plenty.
Getting the Most Out of Your Textbook

McGraw-Hill and the authors of this book have invested their time, research, and talents to help you succeed as well. The goal is to make learning easier for you.

What’s New This Edition

- The material in various chapters has been expanded to include new procedures, more on electronic health records, and more on use of the Internet.
- This edition of the textbook features more than DOUBLE the number of practice exercises with heavy emphasis on the building up and deconstructing of word parts.
- By the end of studying this text, students will be able to understand a wide range of medical vocabulary.

McGraw-Hill LearnSmart: Medical Terminology

McGraw-Hill LearnSmart is a diagnostic learning system that determines the level of student knowledge, then feeds the student appropriate content. Students learn faster and study more efficiently.

As a student works within the system, LearnSmart develops a personal learning path adapted to what the student has learned and retained. LearnSmart is also able to recommend additional study resources to help the student master topics.

In addition to being an innovative, outstanding study tool, LearnSmart has features for instructors. There is a Course Gauge where the instructor can see exactly what students have accomplished as well as a built-in assessment tool for graded assignments.

Students and instructors will be able to access LearnSmart anywhere via a web browser. And for students on the go, it will also be available through any iPhone or iPod Touch.

McGraw-Hill Connect Allied Health

McGraw-Hill Connect Allied Health is a web-based assignment and assessment platform that gives students the means to better connect with their coursework, with their instructors, and with the important concepts that they will need to know for success now and in the future. With Connect Allied Health, instructors can deliver assignments, quizzes and tests easily online. Students can practice important skills at their own pace and on their own schedule. With Connect Allied Health Plus, students also
get 24/7 online access to an eBook—an online edition of the text—to aid them in successfully completing their work, wherever and whenever they choose.

Here’s How
Throughout the pages of Medical Terminology: Language for Health Care, you’ll find an organized learning system. Follow it throughout your course and you will become a proficient “speaker” of the language of health care.

A Journey Through Medical Terminology: Language for Health Care

Forming Medical Terms
The first three chapters of the book introduce the way that most medical terms are formed. Most medical terms are built from word parts, often derived from Latin and Greek terms. These three chapters introduce many of the major word parts used in the formation of medical terms.

Chapter 1 gives the major combining forms used in medical terminology except for the combining forms that are more specific to each body part. Those combining forms are learned in each chapter that covers a different body system.

Chapter 2 provides the majority of general prefixes and suffixes that are used to form medical terms. Learning these prefixes and suffixes will enable you to break apart built-up terms that you are not familiar with and understand their meanings by knowing the meaning of the parts.

Chapter 3 introduces you to the body systems you will be studying throughout this book. It also covers the most commonly used body system word parts, which are then repeated in the individual body system chapters. This concentrated repetition is designed to reinforce the body system approach to medical word building.

Using the Systematic Learning Approach
Chapters 4 through 16 are the body system chapters. The format of these chapters is designed to acquaint you with an overview of each body system, including coverage of its basic anatomy and physiology. At the same time, each chapter teaches the specific terms and word parts used in the medical terminology. Each body system chapter is presented in the following format:

A. Objectives
B. Structure and Function
C. Combining Forms and Abbreviations
D. Diagnostic, Procedural, and Laboratory Terms
E. Pathological Terms
F. Surgical Terms
G. Pharmacological Terms
H. Terminology in Action and Challenge Section
I. Using the Internet
J. Section Exercises
K. Chapter Review
L. Answers to Chapter Exercises
A. The Objectives alert you to the major concepts to learn. Complete the exercises in each section of the chapter. Answers to the exercises appear at the end of the chapter.

B. The Structure and Function section provides an overview of the body system with important key terms. These terms are listed in a Vocabulary Review table at the end of each section.

C. The Combining Forms and Abbreviations section introduces the combining forms and abbreviations relating specifically to the body system that is the subject of the chapter.

D. The Diagnostic, Procedural, and Laboratory Terms section introduces medical terms used in ordering and receiving laboratory reports, making diagnoses, and performing medical procedures.

E. The Pathological Terms section covers a range of diseases and conditions for each body system.
F. The Surgical Terms section provides an overview of common surgical procedures performed for each body system.

G. The Pharmacological Terms section covers the classes of drugs used to treat illnesses of the system being discussed and provides examples of both generic and trade name medications.

H. The Terminology in Action and Challenge Sections are an additional opportunity for critical thinking.

I. Using the Internet offers you an opportunity to gather information from a medical Web site and familiarize yourself with medical offerings on the Internet.

J. Section Exercises provide review of each section.

K. The Chapter Review gives a complete listing of key terms, combining forms, and abbreviations learned in the chapter.

L. Answers to Chapter Exercises allow self-study and instant feedback so you can determine how well you learned the material.
Special Features

Each chapter contains some special features that reinforce learning, provide additional information, or expose you to realistic situations that you may encounter in your chosen allied health profession.

A. Case Studies throughout the text provide you with realistic health care situations. The case studies show you how terminology and abbreviations are used in a realistic context.

B. Critical Thinking following the case studies and in some other special sections, you are asked critical thinking questions. Critical thinking skills are essential to the development of your decision-making skills as a future allied health care professional.

C. More About boxes throughout the book provide some medical information that would not normally appear within a medical terminology text.

D. Internet References appear in many places in the margin of the text. These references direct you to the Internet to learn more about the material being studied and to familiarize yourself with using the Internet to enhance your knowledge—something that will be helpful to you both personally and professionally throughout your life. Although all Web sites have been checked, some Web sites become inactive. In such cases, if the Web site does not work, use a search engine on your computer to find another source. Simply insert a related word and go to some suggested sites to find more information.

Warning: Using the Internet can be helpful but it may also be harmful. Some people are posting false and even damaging or misleading medical information on the Internet. Check the source of the site to make sure it is a trustworthy medical resource. Avoid advertisements, clubs, and articles written by anyone asking for a donation. Use common sense—if it sounds too good to be true, it usually is false. Also, if someone is trying to sell you something, beware of buying medical items on the Internet without sound medical advice. Never substitute the advice of someone you don’t know on the Internet for the advice you can get from a medical professional.

Specialized Chapters

Chapters 17 through 23 cover general and special areas of health care.

- Chapter 17 Human Development
- Chapter 18 Terms in Oncology—Cancer and Its Causes
- Chapter 19 Diagnostic Imaging, Radiation Oncology, and Surgery
- Chapter 20 Terms in Psychiatry
- Chapter 21 Terms in Dental Practice
- Chapter 22 Terms in Pharmacology
- Chapter 23 Terms in Complementary and Alternative Medicine
Additional Study Resources

In addition to the textbook, McGraw-Hill offers the following study resources to enhance your learning of medical terminology:

- An interactive student CD-ROM. The next section gives instructions for using the CD-ROM.
- A set of English audio CDs. The two English audio CDs are organized by chapter sections. You can use these to test your ability to spell and pronounce all key terms in the book.
- An Online Learning Center (OLC) Web site. The Web site (www.mhhe.com/medterm3e) includes an Information Center with general information about the medical terminology program. It includes an instructor’s side with resources for classroom testing and management. For you, the student, it includes major checkpoints from the text along with additional learning activities. These additional activities will reinforce what you learned in the text and what you practiced on the student CD-ROM.
- A Spanish-English audio CD (available for purchase). To use this audio CD effectively, listen to the Spanish words while you look at the selected Spanish terms in the appropriate body system chapter. If you want to read the definition in Spanish, refer to the Spanish Glossary on the Online Learning Center (www.mhhe.com/medterm3e).

Using the CD-ROM

The Medical Terminology: Language for Health Care, Third Edition Student CD-ROM is an interactive tutorial designed to complement the student textbook. In it you will find key terms, flashcards, drag and drop word building and labeling exercises, and games (such as Hangman and That's Epidemic!) that are designed to challenge you.

System Requirements

To run this product, your computer must meet the following minimum specifications:

- Pentium II or higher processor
- Microsoft Vista 2000, or XP (Windows XP recommended)
- 64 MB of RAM or higher (128 required for Windows XP)
- 800x600 or higher desktop display
- 16-bit or higher desktop color (24-bit or 32-bit highly recommended)
- Internet Explorer 5.5 or higher required (6.0 or higher recommended)
- Windows Media Player 7.1 or higher required (9.0 or higher recommended)

Installation

The installation and setup program checks your computer to make sure it meets the minimum specifications to run the Medical Terminology: Language for Health Care, Second Edition Student CD-ROM.

To run the installation program:

1. Insert the CD-ROM into your CD-ROM drive.
2. In the Run: box, type D:/Start_Here.exe (Where D is the letter of your CD-ROM drive).
If you have already installed the program, AutoRun will ask if you want to run the program instead.

If AutoRun does not start automatically, you will need to follow these steps:
1. Click the Windows Start menu and go to Run.
2. In the Run: box, type D:\autorun.exe (where D is the letter of your CD-ROM drive).
3. Click OK.
4. To run the program after it is installed, go to the Windows Start menu, point your mouse to Programs (or All Programs), point your mouse to Medical Terminology, and click the icon for Medical Terminology.

The Help Section
Once you have installed the software, you are strongly encouraged to read and review the Help section of this software. The Help section will explain in detail all of the features and activities. It will also discuss frequently asked questions and offer troubleshooting tips. To access help, click on the Help button found on the top right of your computer screen.

Software Support
If you are experiencing difficulties with this product, please contact our Digital CARE team at http://www.mhhe.com/support.