

COOL SCIENCE CAREERS

# SOUND ENGINEER





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## CHAPTER ONE

# TOOLS OF THE TRADE



*Good sound engineers have an aptitude for working with electric, electronic, and mechanical systems and equipment.*

**H**ow would you like to be in the studio with your favorite musical group as they record their new album? How would you like to help that group make this recording their best ever? This is exactly what some sound engineers do.

The job of sound engineer involves knowledge of science. However, it does not lead into the laboratory, as many cool careers in science do. Sound engineers help create what we hear at indoor and outdoor concerts and on the radio, television, compact discs, and movies. In this way, they make use of both their scientific training and their ability to use computer technology.



What type of person might be interested in (and good at) this kind of job? Think of the key skills a sound engineer might need. Then, as you read this book, add to your description.



*Sound engineers must be good at working as part of a team.*

In this book, you'll learn what sound engineers do. You'll see the part they play in making the finished product that you hear. You'll also explore several jobs in the field. In the final chapter, you'll learn how a person might train for such work.

First, let's look at the tools a sound engineer works with. The tools of a sound engineer include **microphones, speakers, recorders, and amplifiers.**

At concerts, these are placed to bring the best possible sound to the audience. In the studio, these tools are used to get the best sound on record.



*Sound engineers must master a computer console with dozens of dials to create the desired sound.*



Careers in sound engineering continue to grow as movies, television, music, and radio expand. Besides recording studios, sound engineers work in stadiums, theaters, concert halls, churches, and many other venues around the world. You might want to check out the opportunities.

A sound—a song, for example—can be recorded into a computer **console**. There it can be changed, just as we are able to edit our own writing on the computer.

Changes might include adding some more musical instruments. Or the artists and the engineer might “mix in” additional sounds. They may also change existing sounds to make new ones. These “tracks” can then be added to the one that holds the original song. This process continues until the artists feel they have brought out the music they have in their heads and put it in a form that everyone can hear.

## CHAPTER TWO

# MASTERS OF SOUND



*Reel-to-reel tape recorders became popular in the 1960s and were replaced by digital recording in the late 1980s.*

**L**ess than 30 years ago, sounds were mixed using eight-track, reel-to-reel tape recorders. Each track was recorded. Then, the various tracks, such as vocals, strings, brass, and so on, were woven together. This was done



*The Beatles and their innovative sound helped define music in the 1960s.*

by playing the tapes all at once and recording them together. As you might imagine, this required an immense amount of time, patience, and skill.

Today's computers can do this in an instant, though they still must be controlled and guided by the musicians making the recording and, of course, by the sound engineer.

Albums of the classic rock group the Beatles were done this way. Their talent as musicians and songwriters was highlighted by the blending of many taped tracks.

The music that resulted was a sound unlike anything that had been done before. These albums are also good illustrations of the collaboration, or working together, of the artists and the sound engineer.



Most of the old Beatles albums have been "remastered" and made available on compact disc or through music downloads like iTunes. Find out what *remastered* means. Why do you think some people like the sound produced by the older, reel-to-reel technology better? What can be done to make digital recording sound more "real"?



When he was in his early teens, Daniel Lanois set up a recording studio in his mother's laundry room. There he recorded local bands for about \$6 a recording. What life skills was he exhibiting?

Sometimes that sound engineer is also a musician. This ability can add even more creativity to the process.

In pop music, French Canadian musician and sound engineer Daniel Lanois [lan-WAH] has won numerous awards. He writes and performs his own songs. His abilities, together with his vast knowledge of sound production, have allowed him to mix roles. He often plays instruments on the recordings that he works on as sound engineer.



*Rudy Van Gelder was a favorite sound engineer for mid-century jazz greats such as Miles Davis, Thelonious Monk, and John Coltrane.*



One of the important skills for a sound engineer is creativity. How was Rudy Van Gelder being creative in recording jazz artists?

In the world of jazz, the name Rudy Van Gelder brings to mind a different sort of sound engineer. Over the decades, Van Gelder recorded many jazz performers. His aim as a sound engineer was to produce recordings that were as balanced as possible—the kind of sound you’d experience if you were sitting in the best seat in a small jazz club. His efforts preserved the sounds of long-gone artists for generations to come.

## CHAPTER THREE

# POSSIBILITIES IN THE FIELD



*Working in the field requires sound engineers to work quickly and efficiently in sometimes-difficult circumstances.*

**N**ot all jobs for sound engineers take them into the recording studio.

In fact, only a small percentage of sound engineers do work in recording studios. Most jobs for sound engineers take them “into the field.” This means that the sound engineers have to go wherever the action is.



Sound engineers work all over the world. Musical artists, speakers, and theatrical productions appear in countries from China to Brazil. At the same time, local artists are performing and recording. All use the skills of sound engineers.

## Music, Music, Music

One of the jobs for a sound engineer that many people know is to work on a concert tour for a rock band. Often these concerts are outdoors, and that fact can bring special problems. For example, what if a rainstorm delays the set-up of the *tons* of equipment? The sound engineer determines where to place the giant speakers and amplifiers. Then all the equipment needs to be wired together, which can mean *miles* of cables.

Once the equipment is set up, the sound check can begin. The sound engineer uses the computer console, a part of the band's touring equipment,

to check sound levels. The engineer also uses the console to take out any electronic whines, buzzes, or other noises produced by the equipment. During the concert, the engineer makes sure the audience hears the best sound possible. If the concert is being recorded, the engineer makes sure that the recording progresses smoothly, too.



*Sound equipment is fragile. Each piece is often packed in a separate box that is very sturdy on the outside and padded on the inside.*



Loud music, either on stage or in the studio, can cause hearing loss. Many publications for sound engineers urge them to keep levels low and wear headphones whenever possible. The same advice applies to listeners.

If the band is on a world tour, the job of a sound engineer can be physically demanding, too. A tour means quickly setting up and taking down all the equipment, accounting for every piece, and boxing it to be moved. Then everything has to be set up in the new location. The sound engineer also may have to endure long plane rides, strange food, and time changes that literally turn day into night.

## At War

Radio and TV news reports sometimes require sound engineers to work in the field, too. Obviously, a job like this is not for everyone. Sound engineers in the field have been killed or badly injured. Their