Welcome back to our Introduction to Podcasting Series. Today's presentation is Editing an Audio Recording with Audacity.

In today's presentation we will:

-Define what a Podcast is,
-Review some podcasting terminology,
-Provide an introduction to Audacity,
-Identify where you can download Audacity and the LAME MP3 Encoder,
-Demonstrate how to install Audacity and the LAME MP3 Encoder,
-Demonstrate how to setup and configure your microphone for recording,
-Demonstrate how to create an audio recording or podcast using Audacity.

In today's presentation we will:

-Audacity Preferences (Edit | Preferences)
-Create a new Audacity Project (File | New)
-Import a music clip (Project | Import Audio)
-Record an audio narration clip using the microphone (Make sure Microphone is selected in the dropdown box in the middle of the screen)
-Add silence or noise to a recording (Generate | Silence or options from the Generate Menu)
-Edit the recording (Cut, Paste, Delete)
-Discuss Control Toolbar (Selection Tool, Envelope Tool, Zoom Tool, Time Shift Tool)

-Add Effects to the recording (Effects menu)
        -Adjust the Amplitude of the recording
        -Adjust the Pitch or Bass
        -Fade In/Fade Out
-Save the entire selection as one MP3 file
-Save one track as an MP3 file
-Discuss the next steps for getting ready to use iTunesU

Did you Know...

- *More than 6 million American adults have listened to podcasts*
- *29% of those who own MP3 players enjoy Web broadcasts at their leisure*

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PEW Internet and American Life Project

BY: PIP Director Lee Rainie and Research Specialist Mary Madden
(202-419-4500)
RE: Podcasting
DATE: April 2005

Terminology

- **Podcast is derived from two words**
  - **P.O.D (Portable On Demand)**
  - **Broadcast**
- **Podcast**
  - **Collection of digital media files distributed over the Internet**
  - **Distributed using RSS Feeds**
  - **Played on portable media players and personal computers**

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The word podcast is derived from two words:
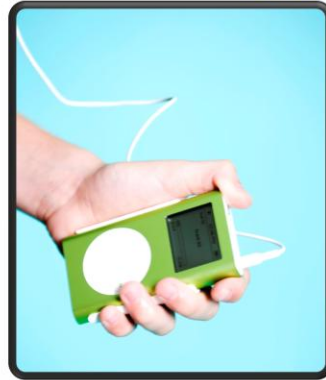
- P.O.D. (Portable On Demand)
- Broadcast

Podcasting is the process of capturing an audio event, song, speech, or mix of sounds and then posting that digital sound object to a website or blog in a data structure called an RSS feed.

- Podcasting & Vodcasting White Paper
  University of Missouri
  Peter Meng

You do <u>NOT</u> have to own an iPod to be able to create or listen to a podcast.

There is a common misconception that you have to own an iPod to be able to create or play a podcast. Podcasts can be used with a variety of digital audio formats and play on almost any MP3 player or portable digital media device – as well as any brand of desktop computer or laptop.

Let's review some of the terminology you may run into when you are creating or viewing podcasts.

If you were to create an audio recording with a program like Audacity or GarageBand and post it in iTunesU for distribution, you would be considered a podcaster. A podcaster is anyone who creates an audio recording and distributes it through an RSS feed.

An RSS feed is what is used in conjunction with your website to notify people who have subscribed to your website of changes that you have posted. For podcasts, people usually subscribe to a podcast feed. For example, say your local radio station records their morning talk show. You can subscribe to the morning talk show feed. Then when the latest recording is added to their website, you will receive a notification in your "podcatcher" software or podcast receiver.

So what you may ask is what is a podcatcher or a podcast receiver. A podcast receiver is software that you can use to receive the information from your RSS feeds. When the feed you are subscribed to is updated, a message will be sent to your podcast receiver with a link to a media file that you can download. This media file can be played on your local computer or placed on a portable media device such as an iPod or MP3 Player.

So the final item in our terminology review is the audio or video editing software. Audacity and GarageBand are examples of audio editing software that can be used to create audio podcasts. Audacity is free and is available for Mac, Linux and Windows based machines. It is recommended that your audio files be in AAC or MP3 format with the appropriate file extension (.m4a or .mp3). Windows Movie Maker, iMovie and Adobe Premiere Elements are examples of a video editing software that allows you to create video podcasts or vodcasts. Windows Movie Maker is a video capture and editing software that comes with the latest versions of Windows XP and Windows Vista. iMovie is a tool in the iLife suite that comes standards on Mac's. Adobe Premiere Elements comes free with the university recommended Lennovo laptops. Video files should be in MPEG-4 format with H.264 compression and with the appropriate file extension (.mp4, .m4v, or .mov).
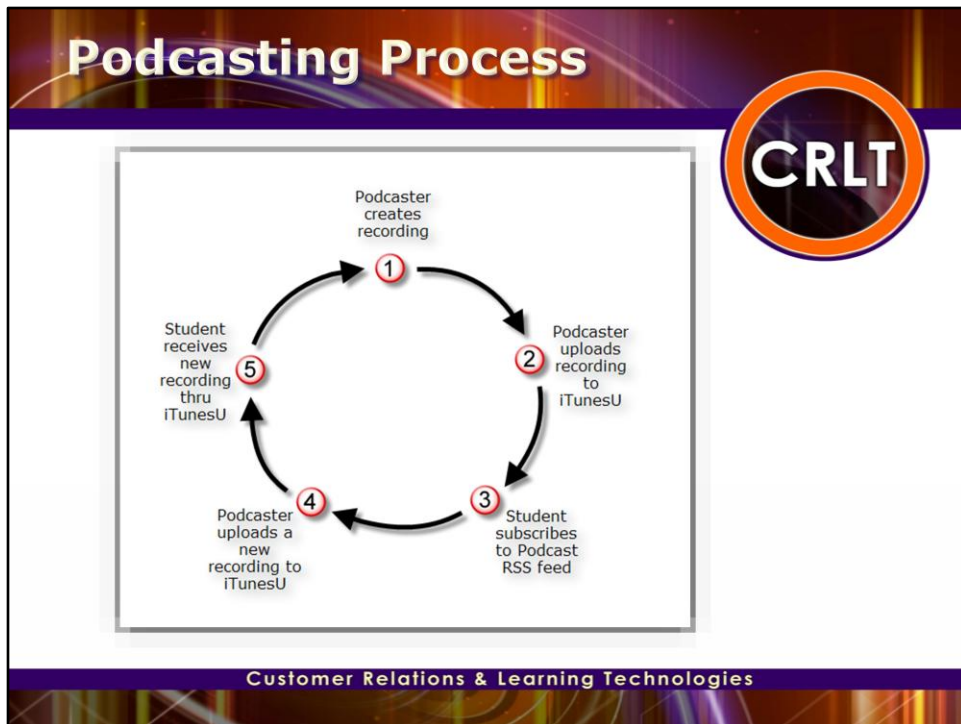
Here is the flow of how the podcasting process works:
First the instructor creates the recording. Then they upload the recording to iTunesU and provide the students with the URL to subscribe to the podcast. The student subscribes to the podcast(which shows up as Album in iTunesU). As soon as they subscribe it automatically downloads the latest recording(it places it in the Podcast library). Then the next time the instructor updates or adds a podcast (which shows up as a track) iTunes will automatically download the podcast.

Although this series of classes is based on iTunesU, there are other ways you can publish and subscribe to podcasts. Podcasts are not specific to iPods. They can be played on your local computer or any MP3 player.

There are currently no fees associated with using iTunesU. There may be minimal costs involved for podcasting depending on your current equipment and the software chosen to create pod or vodcasts.

Did you Know...

- **Free Resources Are Available**
  - **Software**
    - Mac Users – iLife Suite, Audacity
    - PC Users – Audacity, Movie Maker
  - **Equipment**
    - Library and Academic Success Center
      - FlipCams
  - **CRLT has the following available to faculty to borrow**
    - H2 Handy Recorder
    - Video Recording Kit

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There are free resources available online and on campus to assist you in getting started with podcasting.
If you have a Mac more than likely it came with the iLife suite of applications. The iMovie and GarageBand applications can be used in conjunction with iPhoto to create Audio and Video Podcasts. For our Windows users, your PC most likely came with Windows Movie Maker or you can also download audio software like Audacity to create audio recordings.

The Library as well as the Academic Success Center have FlipCams and Microphones that students can checkout or borrow for class projects. Faculty can also reserve these items at the Library.

The CRLT group in CCIT has two devices that are available for faculty to borrow. These include:

Audio
H2 Handy Recorder: excellent for recording small group discussions; bidirectional microphones; excellent audio quality

Video
Video Recording Kit: camera, external microphone, table-top tripod and unipod, everything you need to record video

We currently offer training for Movie Maker, Audacity, iTunesU, Podcasting thru Blackboard, iMovie and GarageBand. You can register for any of these training classes by going to http://www.clemson.edu/ccit and clicking the Instructor Led Training Registration link.

Did you Know...

- **Cheap**
- **Invites a Global Audience**
- **Do not have to listen to it in real time**
- **Instant Product**
- **Encourages no-frills communication**
- **A form of digital storytelling**
- **Can be creative and fun**

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If you look up some of the benefits of podcasting on the web you will most likely find the following:
-They are cheap
-They invite global audiences
-You don't have to listen to it real time
-You produce and instant product
-Encourages no frills communication
-It's a form of digital storytelling
-It's a creative and fun way to communicate

From an education perspective some of the benefits of Podcasting discovered by the University of Wisconsin Madison in their 2006 Engage Podcasting Adaptation Award project, were:

-Led to the creation of new and innovative materials
-Provided effective supplementary materials
-Allows faculty to expand the range and depth of assignments, and to create authentic, interesting and up to-date materials

"I've seen attendance increase, mostly because the podcasting has generated interest and enthusiasm. We're doing interesting, technology-based things in the course." - "Confessions of a Podcast Junkie". Educase Review, May/June 1007. Windham, Carrie. P.54.

Frydenberg asked students how long they would listen to a podcast. The majority said six to ten minutes, so he switched the format to allow the students instead to become the instructors, for sessions lasting six to ten minutes. **- "Confessions of a Podcast Junkie". Educase Review, May/June 1007. Windham, Carrie. P.58.**

The same study by the University of Wisconsin Madison called 2006 Engage Podcasting Adaptation Award, found that students felt they received the following benefits from Podcasting.

-Students appreciated the convenience podcasting affords in terms of accessing their course materials whenever and wherever is most convenient
-Students felt there was a greater understand of the course content
-Students felt it enhanced their learning experience
-Students used podcasts to study for exams, review course content, a resource for completing an assignment
-Students felt that recorded class lectures distributed via podcast allowed them to clarify material discussed in class
-Student indicated that it allowed them to study in locations previously unable, like on a bus or sitting outside
-It was nice to be able to go back and listen to particular concepts ones that may not have been understood the first time

-**"Confessions of a Podcast Junkie". Educase Review, May/June 1007. Windham, Carrie. P.62-63.**

The students who have taken courses with podcasting offer concrete advice to faculty who might consider adding the technology to the syllabus:

- Don't assume: Just because a student totes an iPod on campus doesn't mean that the student is podcast-savvy. "I don't even think I knew what a podcast was," says Sean Finnegan, a student in Mark Frydenberg's computer information systems class at Bentley College. Even for frequent downloaders, creating content might not come easily. Faculty should offer simple guidelines for downloading, playing, and creating content, either as an in-class exercise or as an online simulation.

- Keep it simple: When Frydenberg asked his students how many had actually been downloading his podcast lectures, they complained that the podcasts were too long. Students stress the need to keep audio and video concise and engaging. Even time spent "on the go" is valuable time. Larry Clemen complained that the podcasts in his Executive MBA program took too long—fifteen to twenty minutes—to download.

-Quality counts: A novice podcast listener can tell the difference between poor sound and sound that reflects even a small amount of attention to detail and quality. For students to value a podcast, they need to believe that the professor values it as well. Part of that comes from demonstrating a commitment to quality in recording. Daun Maier compares her reaction to a bad podcast to her reaction when an earbud on her iPod isn't working correctly. "It's completely annoying, and you're not hearing the music to the quality that you want," she says. But she also says that she truly valued the emphasis that her professor, Randall Dunham, placed on quality in the video podcasts that he delivered to class. "They were clear, and there were no distractions because of the equipment," she says. "Otherwise, I would have become frustrated, and I didn't at all."

- Make it relevant: Sasha Stein, from Duke University, has seen her share of podcasting flops at the iTunes U. The best implementation came in Richard Lucic's class, where the students listened to guest speakers as well as to podcasts of outside lecturers. "I can't stress enough," she says, "that the material has to be relevant to the rest of the course. Otherwise, it's just a cool technology to have." Material should have a clear connection to the actual course, making a seamless transition between face time and the online realm.

- Offer something more: For the professors who have implemented podcasting technology, the most common concern they hear from their peers is that students will stop showing up to class if the material is downloadable. In reality, they say, the opposite is true. The trick, students say, is to make sure that there is something to gain by attending class and downloading the lecture. Podcasts should add a new perspective or offer supplemental material. If lectures are podcast, faculty should use classroom time to facilitate discussion, demonstrate models, or simulate problems. "You're going to gain something out of the classroom experience—it's that personal lecture experience," says Maier. "You get comments from other individuals, and examples are brought to the table by other parts of the class."

- Don't limit imagination: When Frydenberg asked his students to create short recaps of classroom lessons, he gave them the basic framework for tooling a podcast. Other than that, he left the door wide open for interpretation. Finnegan, a student in the class, says that if he were giving advice to a professor, he would say: "Don't set up a lot of criteria about what to do and how long it needs to be. Don't limit the material and how to do it." Finnegan, who crafted a podcast on HTML coding for Frydenberg's class, says that the most important thing is to give students open license to create.

-Encourage exploration: When Lucic implemented podcasting in his course, he didn't limit iPods to the classroom. Instead, he encouraged his students to do something creative with the iPods in their spare time. Stein took his advice and carried her iPod to a campus lecture so that she could record the speaker for a friend. Professors should encourage their students to think outside the box, Stein says, and outside the classroom.

Did you Know...

CRLT

- **Submit a Ticket**
  - **http://www.clemson.edu/ccit/support services/index.html**
- **ITHELP@clemson.edu**
- **http://www.clemson.edu/ccit**
  - **Instructor Led Training Registration**
- **http://www.clemson.edu/iTunesU**

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You can ask questions by submitting a ticket or emailing ITHELP@clemson.edu. You can also find additional information about the services and training we provide on the CCIT website under Instructor Led Training Registration. To access iTunesU, you can go to the Clemson iTunesU website.

Coming soon a Podcasting Resources website!!

Ok so let's start learning about Audacity. First you will need to go to this website and download Audacity and the LAME MP3 encoder.
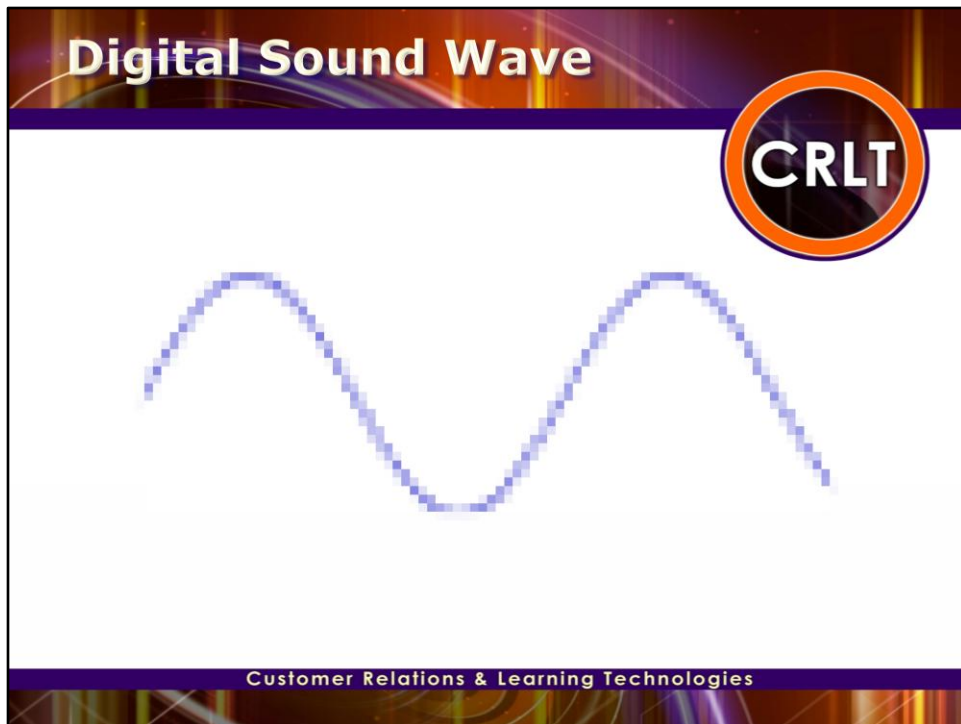
Each dot in the figure above represents one audio *sample*. There are two factors that determine the quality of a digital recording Sample Rate and Sample Format or Size.
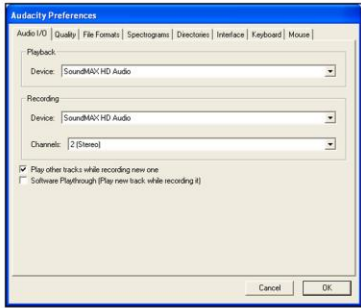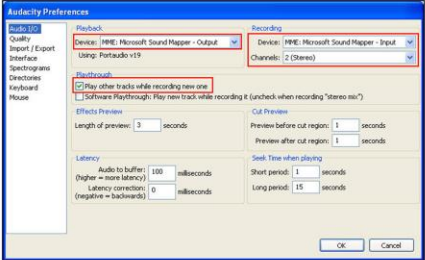
Sample rate is the rate at which the samples are captured or played back. These are usually measured in Hertz (Hz), or samples per second. An audio CD has a sample rate of 44,100 Hz. This is also the default sample rate that Audacity uses. Higher sampling rates allow a digital recording to accurately record higher frequencies of sound.

Sample format or **sample size** is the number of digits in the digital representation of each sample. Think of the sample rate as the horizontal precision of the digital waveform, and the sample format as the vertical precision. An audio CD has a precision of 16 bits, which corresponds to about 5 decimal digits. Higher sample sizes allow for more dynamic range - louder louds and softer softs.

The first thing we want to do is adjust our recording preferences. To do this, choose Preferences from the Edit menu.

On the Audio I/O tab, you can adjust your audio inputs and outputs. You will want to adjust your Playback and Recording Device. This is also where you can adjust whether your microphone records in mono or stereo. If you want to be able to record and play sound at the same time, you will need to enable the Play other tracks while recording new one.

On the Quality tab, you can adjust your Default Sample Rate and your Default Sample format. This is the information that we discussed previously regarding when we were looking at the Digital Sound Wave
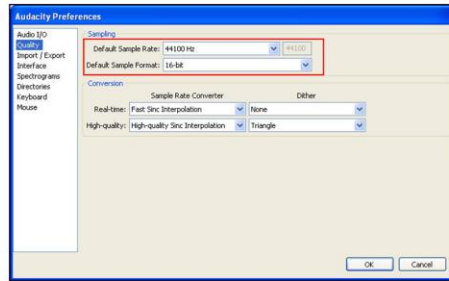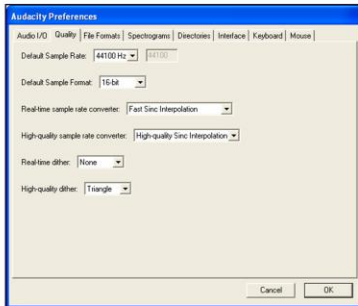
On the Quality tab, you can adjust your Default Sample Rate and your Default Sample format to ensure that you are recording at a good rate and in a good format. This is the information that we discussed previously regarding when we were looking at the Digital Sound Wave. Remember by default Audacity records at 44,100 Hz and is set to a default precision of 16 bits as these are equal to the quality of a normal CD.

There are two main types of audio files on a computer PCM and Compressed files.

PCM stands for Pulse Code Modulation. This is just a fancy name for the technique in which each number in the digital audio file represents exactly one sample in the waveform. Common examples of PCM files are **WAV** files and **AIFF** files. Both of which are supported by Audacity.

The other type of files are called compressed files. Earlier formats used logarithmic encodings like the **Sun AU** format. Modern compressed audio files use sophisticated psychoacoustics algorithms to represent the essential frequencies of the audio signal in far less space. Examples of these include **MP3** (MPEG I, layer 3), **Ogg Vorbis**, and **WMA** (Windows Media Audio). Audacity supports MP3 and Ogg Vorbis, but not WMA format as this is proprietary to Microsoft or the MPEG4 format that is proprietary to Apple's iTunes.
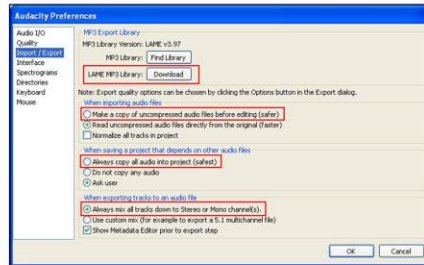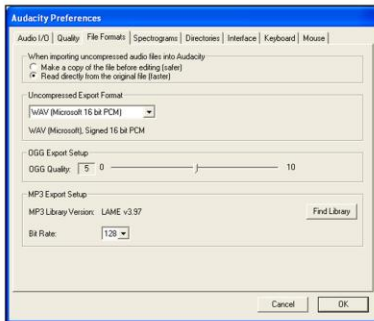
On the File Formats tab, you can setup your Uncompressed Export format, and your Compressed Export formats for MP3 and OGG.
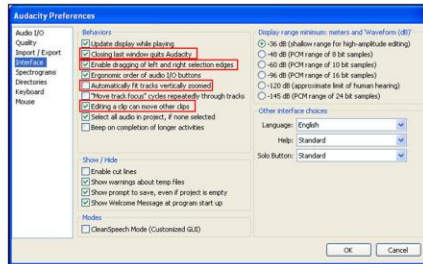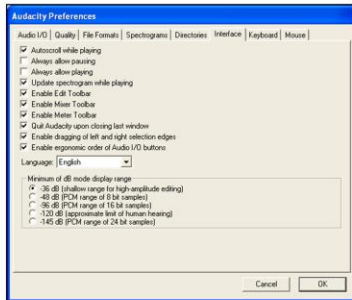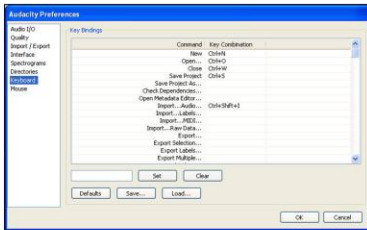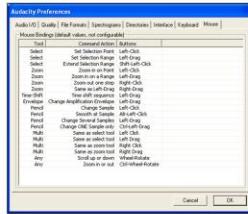
Use the checkboxes on the Interface tab to adjust the Audacity interface. You can disable toolbars and setup preferences for how you want Audacity to behave. For example, if you want Audacity to quit, once you have closed the last window, you can enable this checkbox.
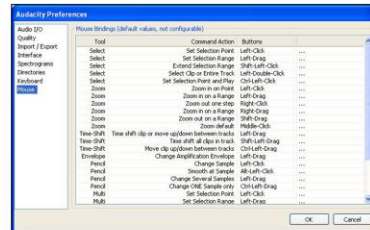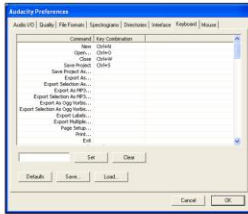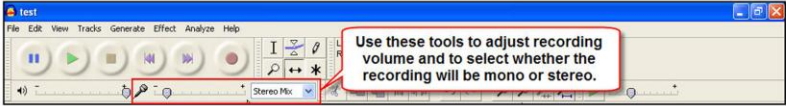
Adjust the mouse and keyboard shortcuts on the Keyboard and Mouse tabs respectively.

Use the slide bar with the microphone in front of it to adjust your recording input volume. If your sound is coming in too loud, adjust the slider to the left. If it is coming in very faint, adjust it to the right.

Use the drop down menu to select your recording device. Stereo Mix, means that it will record what is being played on your computer. Microphone will record your microphone input.
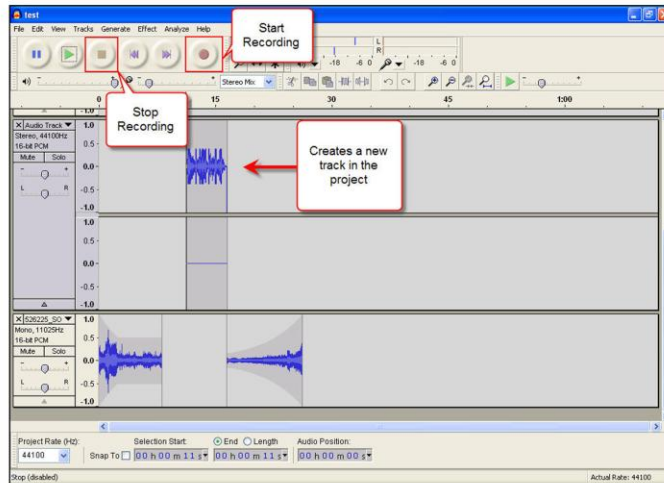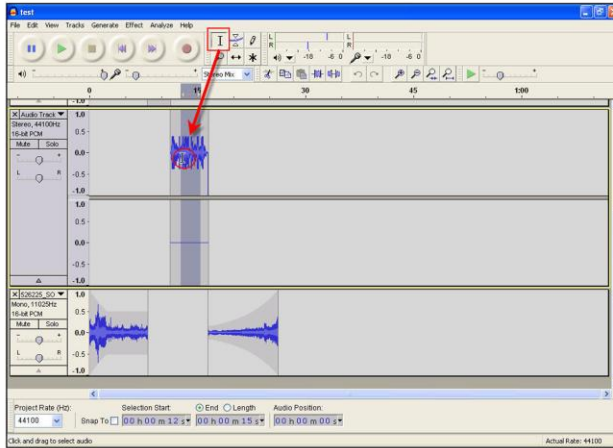
Click the Record button to start a new track and begin recording. Click the Stop button to end recording. Click the Play button to playback the recording. Each time you click record button a new track will be added to your Audacity project.
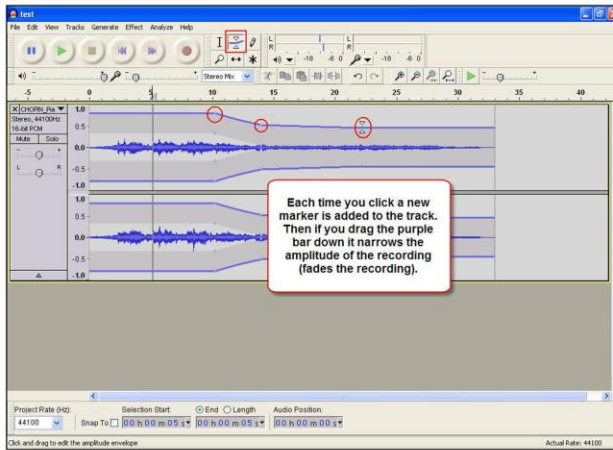
Click the Selection Tool button on the toolbar. Then use your cursor to select portions of your audio recording. You can then use the Cut, Copy, Trim, Silence and Delete buttons or select an option from the Edit menu to modify the selected recording.
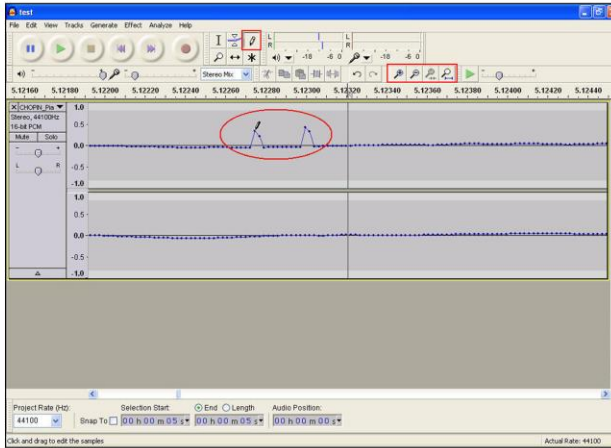
Select the Envelope button on the toolbar. Then click and drag the purple bar to adjust the amplitude of the recording. If you click and drag towards the middle it fades the recording out. If you click and drag outwards, it makes the recording louder. Each time you click it adds a marker to the track where the amplitude can be adjusted.
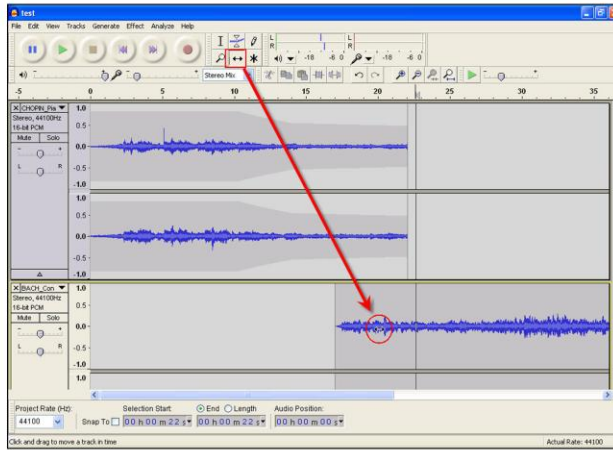
Using the Zoom In button, you can magnify your sound waves to view the individual sample rates. You can then click the Draw Tool button on the toolbar. Then click an individual sample rate (the dots)and modify its pattern by dragging and dropping them.

If you have multiple audio tracks that you are going to merge together in an Audacity project, you will want to use the Time Shift Tool. Click the Time Shift Tool button on the toolbar. Then drag each of the audio clips and line them up. For example, in the screenshot on this slide I have 2 audio clips. The first was adjusted using the Envelope Tool to make the sound fade out. Now I need to move the second audio clip to the end of the first one and use the Envelope Tool to make the sound fade in. To move that clip I select the Time Shift Tool. Then drag and drop the clip in the timeline as to where I want it to start playing. Then I can use the Envelope tool or the Fade In effect to have the audio from the second clip fade in.

You can import additional audio clips like background music or sound effects. Make sure they are not copyrighted or that they are royalty free.

In older versions of Audacity you would select Project | Import Audio from the menu bar. In newer versions, you select File | Import | Audio from the menu bar.

The file formats that you can import include:

.WAV
.AIFF
Ogg Vorbis
FLAC
.MP3
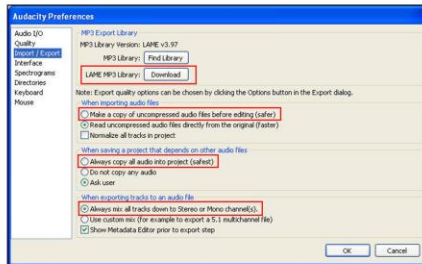
Be sure to save your project file. This will save all of the changes you made without affecting the original recordings. Also, remember when you setup your preferences, you told it to Always copy all audio files into the project. When you save your project, it creates a folder with your project name _ data. This folder is where all of those files are kept. If you want to be able to modify this recording later you need to have both the .AUP file as well as the data folder.
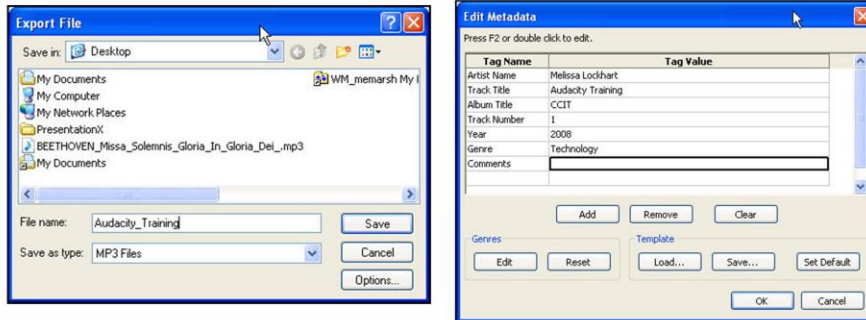
In older versions of the product you choose File | Export as MP3 from the menu bar. In the newer versions you choose File | Export from the menu bar. Then select MP3 for the Save as Type. Once you select this you can enter your album information. This information will then be available for students to see through iTunes.

The next step is to review the Copyright training on the iTunesU website. Then email ITHELP and request an iTunesU account be setup either for a course or a workgroup. Then sign up for the iTunesU training class.

Copyright Guidelines

- http://www.lib.clemson.edu/copyright
- http://www.lib.clemson.edu/govdocs/patents/newpat3.htm
- http://www.clemson.edu/ogc/copyright.html
- http://www.clemson.edu/siteinfo.html#Copyright

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Additional Copyright Information