Communication Research Center

Resource Guide

Version 4.3

The Communication Research Center (CRC) is the College of Communication's (COM's) media research hub. Research is an integral part of faculty and student activities at Boston University. Researchers at COM use the most advanced theory and methods to examine communication phenomena. Addressing both theoretical and applied problems through a range of quantitative and qualitative perspectives, faculty and students engage in the most cutting-edge developments in communication research that provide an extraordinarily fertile ground for innovation and science.

The CRC was established in 1959 and reorganized in 1994. The CRC pioneered the use of television as a research tool, conducting systematic analyses on the effects of television on children and measuring political opinions and voting intentions. This early beginning led the CRC to develop a specialty in survey research methodology.

Today, the CRC has 39 research fellows who specialize in topics including: advertising studies, criticial cultural studies, health communication, human-computer interaction, international communication, journalism studies, media entertainment, political communication, and public relation studies. Several research faculty also serve as editors of competitive peer-reviewed journals.

The CRC has recently updated a number of research tools such as the iMotions biometric research platform which allows faculty and students to examine physiological responses to media (e.g., websites, ads, television programs, and video games). Other recent additions include a virtual reality system which aids faculty and students to investigate issues related to psychological presence, empathy, and immersive storytelling.

In 2009, the CRC established the Communication Research Colloquium Series consisting of monthly research presentations that highlight current and original research of faculty in COM. This forum provides an intellectual exchange of ideas and perspectives, features scholarship in several methodological traditions, and fosters discussions among faculty and students about a variety of research topics in the field of communication.

In 2011, the Dr. Melvin L. DeFleur Distinguished Lecture Series was established. Each year two distinguished scholars from outside of the university are invited to share their outstanding scholarship, expertise, and experience with the BU community. In recognition of the pioneering and inspirational contributions of Dr. Melvin L. DeFleur to the field of mass communication research and his service as a venerable and inexhaustible member of the CRC, the faculty members named this series in his honor.

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Research Resources
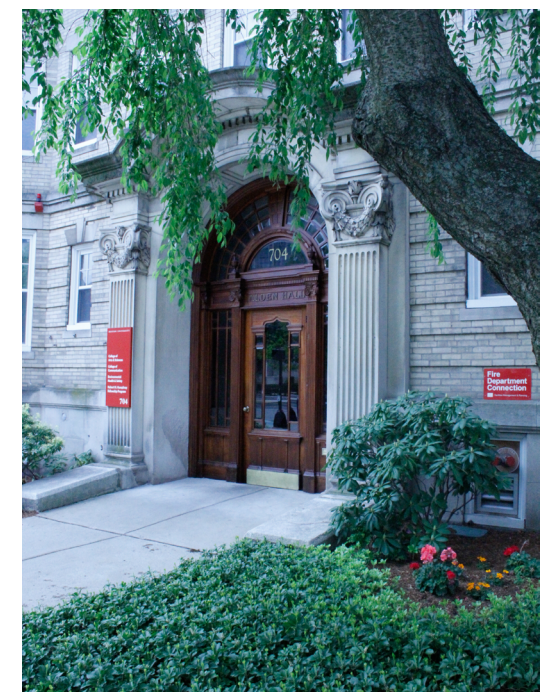
B01A: Viewing Room

This room serves as the observation and recording area for B01B: Multipurpose Research Room and B02B: Naturalistic Research Area. The space is equipped with a 2-way mirror, multiple chairs, and a digital recording tower. The recording tower can create audio/video recordings of sessions in B01B and B02B.

B01B: Multipurpose Research Room

This room can be used for a variety of purposes (e.g., interviews, experiments, focus groups, meetings, and presentations). The space is equipped with 6 flexible tables, 12 chairs, a 65" smart 3D TV with A/V hook-ups, a Blu-Ray player, and a virtual reality workstation (Alienware Tower PC, Oculus virtual reality headset, and 2 Oculus Touch controllers).


B01D: Kitchen

This is an open kitchen with a sink, cupboards for storage, a refrigerator, a microwave, a Keurig coffee machine, and a drip coffee maker. The space is available to faculty and students to use at any time.


B02 Suite: CRC Staff

The CRC staff assist faculty and students with CRC facility, technology, and service needs and questions at the reception desk from Monday to Friday between 9am and 5pm. This suite area has a color laser printer (connected to all computer stations in the CRC). The Lab & Research Manager's office is located in room B02A of the suite.
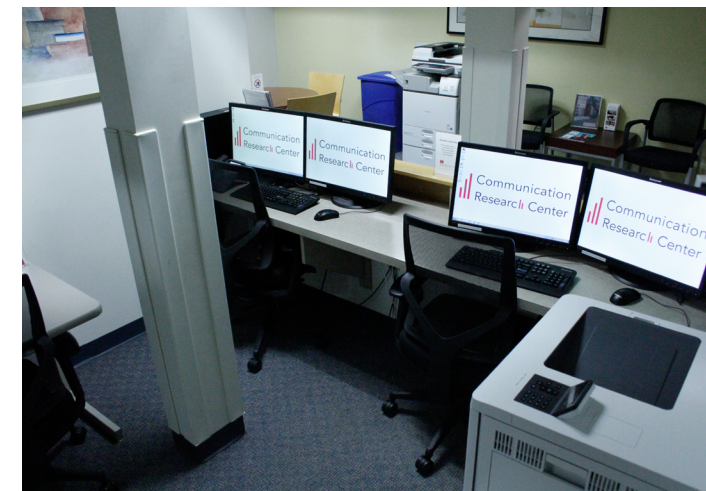
B02B: Naturalistic Research Area

This area serves as a living room simulator intended to gather natural responses to media. The room is accompanied with a 65" smart 3D TV with BU cable and A/V hookups, a Blu-Ray player, a PlayStation 4 with 2 wireless controllers, and a PlayStation VR system. The space also has a table with a single-monitor PC computer station allowing for the collection of self-reported data.
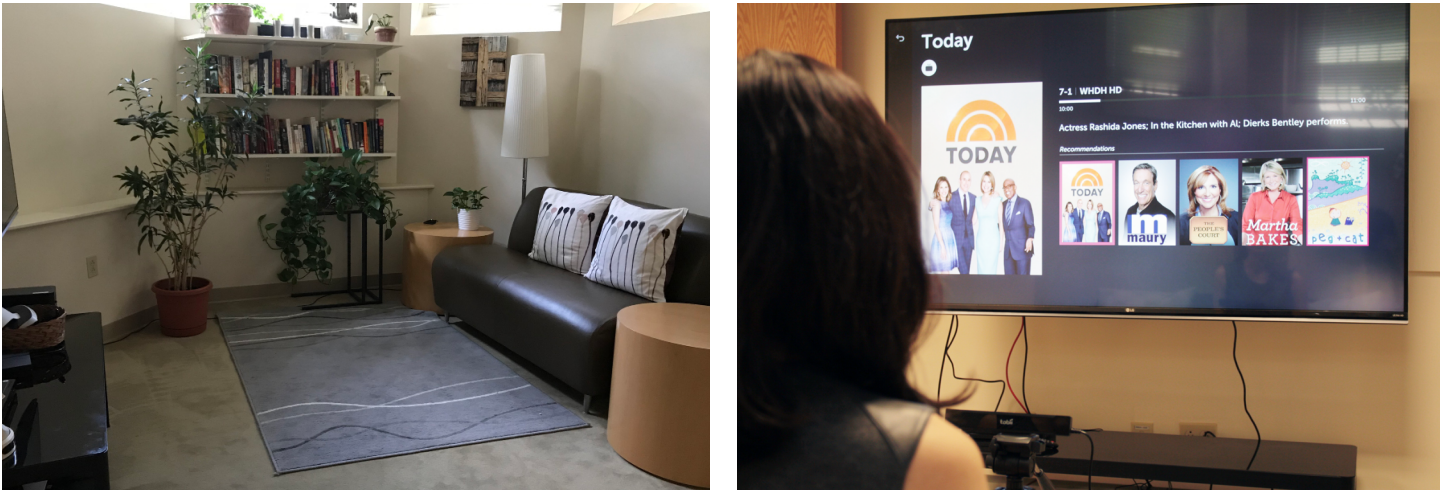
B02C: Data Analysis/Coding Lab

This lab includes 3 dual-monitor PC computer stations for coding media content and analyzing data.

B03: Reception

This area serves as a waiting and greeting area for individuals participating in research studies. When research studies are not in session, the reception serves as an open meeting area for faculty and students to use at any time. There is also a black/white high capacity scanner/printer/copier.

B04D: Graduate Research Hub

This space is devoted to graduate student research. There are 5 single-monitor PC computer stations for graduate students to use at any time. The space also includes a high capacity black/white printer (connected to all computer stations in the CRC), a large mounted white board, and 5 dedicated doctoral student work stations each with a single-monitor PC computer.

B04E: Collaborative Research Area

This is an open meeting and work space for research and includes 6 tables, 16 chairs, a mobile white board, and a 55" TV with A/V hookups. The TV has the capacity to stream audio/video recordings of sessions in B01B: Multipurpose Research Room and B02B: Naturalistic Area.

B04F: Stimulus Collection/Production Lab

This space is dedicated to collecting and producing stimulus materials for research studies. There are 5 iMac computer stations for editing media content and producing stimulus and a small group meeting table.

Psychophysiological Measurement & Analysis Tools

The following technology *requires reservation*:

PC Laptops
iMotions Data Collection/Analysis
There are 2 Lenovo ThinkPad laptops that offer galvanic skin response (GSR) and electroencephalography (EEG) software, facial expression analysis, and a remote eye tracking system through the iMotions biometric research platform. Features include:

Core: Presentation & Data Collection

- *Study Execution:* Allows you to set up a study, present stimuli and record data. The stimuli presentation tool allows you to control rotations, randomizations, and block designs in order to fit even the most complex methodologies.

- *Media types supported:* Still images, videos, website browsing with scroll compensation, screen recording for desktop applications, games, software interfaces, mobile devices, and 3D environments

- *Data Collection:* Synchronization and live stream visualizations of your chosen sensor modalities. Additionally, mouse clicks, mouse position, and all use rkeyboard interactions are recorded and synchronized.

- *Camera:* Connects to webcam in order to record participants during experiments.

- *Markers:* Use live or post-processing markers to annotate and segment recordings of all media types. Calculate statistics on the markers such as average time duration.

- *Exports:* Export complete or partial datasets of raw data and metrics obtained from sensors and user interactions.

- *Reporting:* Export video and image sequences. Choose a specific segment of the timeline to export or export the complete individual and/or batch of videos. Also export snapshot images in batch or individual files.

Qualtrics
- Allows you to launch Qualtrics survey platform from within iMotions and link biometric data and survey data automtically by passing respondent and study information between the two systems.

API - Import/Export
- *Input API* can be used to connect and stream from 3rd party software/hardware and receive data into iMotions.

- *Output API* can live-export events, markers, and triggers from iMotions software to third-party software.

Affectiva Research/Behavioral Modules: Facial Expression Analysis
This module integrates the Affective Affdex SDK 2.0.

- *Valence:* A measure of the positive (or negative) nature of the recorded person's experience.

- *7 Basic Emotions:* Joy, Anger, Surprise, Fear, Sadness, Disgust, and Contempt.

- *Engagement:* A measure of facial muscle activation that illustrates the subject's expressiveness.

- *15 Facial Expressions:* Attention, Brow Furrow, Brow Raise, Inner Brow Raise, Eye Closure, Nose Wrinkle, Upper Lip Raise, Lip Suck, Lip Pucker, Lip Press, Mouth Open, Lip Corner Depressor, Chin Raise, Smirk, and Smile.

- *33 Facial Landmarks*

- *Interocular Distance:* Distance between the two outer eye corners.

- *Head Orientation:* Estimation of the head position in a 3MD space in Euler angles (pitch, yaw, roll).
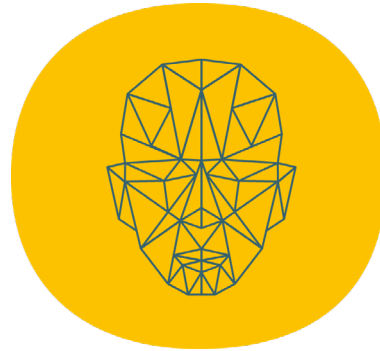
GSR Module
- Enables iMotions software to connect with GSR and heart rate instruments from Shimmer and Empatica.

- Includes storage & visualization of raw GSR & heart rate signal along with accelerometer signals.

EEG Module
- Enables users to connect, record, and live visualize EEG data and metrics from the Emotiv EPOC+ headset.

- Full overviews of channels, metrics, signal strength, and impedance tests are integrated.

Screen-Based Eye Tracking Module
- Enables iMotions software to connect with remote eye trackers and provides a feature rich palette of tools for eye tracking analysis of screen based stimuli (lab based setup).

- Conduct experiments on images, videos, websites, games, software interfaces, and 3D environments.

- Visualizations:
    Individual & aggregate gaze replay
    Static areas of interest (AOI)
    Eye tracking metrics such as time to first fixation, time spent, ratio, revisitors, revisits, fixations, mouse clicks
    Static and dynamic heatmaps

- Define areas of interest to track moving objects.

- Gain access to raw data of X, Y coordinate of eye position, pupil size, inter pupil distance, and distance to screen.

- Pupil, distance, and eye position on the screen are live streamed.

- *Head Orientation:* Estimation of the head position in a 3MD space in Euler angles (pitch, yaw, roll).

- Gain access to raw data of X, Y coordinate of eye position, pupil size, inter pupil distance, and distance to screen.

- Pupil, distance, and eye position on the screen are live streamed.
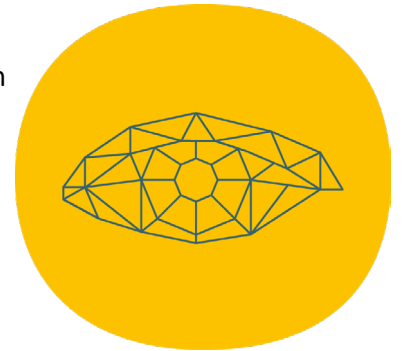
Eye Tracking Glasses Module
- Enables iMotions software to connect with the Tobii Pro Glasses 2 for mobile eye tracking and provides a feature rich palette of tools for eye tracking analysis of natural, "real world" environments.

- Provides automated gaze-mapping technology, in which gaze from dynamic environments is converted to static scenes for simpler aggregation and analysis

- Visualizations:
    Individual & aggregate gaze replay
    Areas of interest (AOI)
    Eye tracking metrics such as time to first fixation, time spent, ratio, revisitors, revisits, fixations
    Static and dynamic heatmaps

Psychophysiological Sensors

Tobii Remote Eye Tracking Sensors
There are 2 Tobii X2-30 remote eye tracking sensors required for use with the iMotions eye tracking module.

Tripods for Tobii Remote Eye Tracking Sensor
There are 2 tripods for the Tobii X2-30 remote eye tracking sensors.

Tobii Pro Glasses 2
There is 1 pair of Tobii Pro Glasses 2, a wearable, mobile eye tracking device compatible with the iMotions eye tracking glasses module.

Empatica E4 Wristbands
There are 4 Empatica E4 wristbands for collecting GSR data compatible with the iMotions GSR module for export/analysis.

Shimmer Sensors
There are 2 Shimmer sensors for collecting GSR data compatible with the iMotions GSR module for export/analysis.

Emotiv EPOC+ EEG Headsets
There are 2 EPOC+ EEG headsets for collecting neuropathy, biofeedback, and brain-computer interface data compatible with iMotions for export/analysis.

Computers

PC Laptops
iMotions Data Analysis
There are 2 Lenovo ThinkPad laptops available for iMotions data analysis. These laptops provide all the analysis capabilities of the iMotions software without the ability to collect data. These laptops do not include Affectiva Research/Behavioral Modules.

PC Laptops
Multipurpose
There are 5 Lenovo ThinkPad laptops for multipurpose use.

MacBook Pros
Multipurpose
There are 3 MacBook Pro laptops for multipurpose research use.

iPads
Multipurpose
There are 5 iPads for multipurpose research use.

Dual-Monitor PC Desktops
There are 3 dual-monitor PC computer stations in B02C: Data Analysis/Coding Lab to code and analyze data.

Audio / Visual Equipment

Digital Recording Tower
There is a digital recording tower (located in B01A: Viewing Room*) that can display live feeds of research sessions occurring in rooms B01B (Multipurpose Research Room) and B02B (Naturalistic Research Area). Audio/video recordings of these live feeds can be saved via designated USB drives (available for reservation).

Reservation requires reserving the room specified above.

TVs / Blu-Ray Players
There are 3 flat screen HD TVs in the CRC:
- B04E: Collaborative Research Area* has a 55" TV with A/V hookups and the capacity to display live feeds of research sessions occurring in rooms B01B: Multipurpose Research Room and B02B: Naturalistic Research Area.

- B01B: Multipurpose Research Room* has a 65" Smart 3D TV with A/V hookups and a Blu-Ray player.

- B02B: Naturalistic Research Area* has a 65" Smart 3D TV with BU cable, A/V hookups, and a Blu-Ray player.

Reservation requires reserving the room specified above.

3D Glasses
There are 4 pairs of 3D glasses compatible with the 65" Smart 3D TVs located in B01B: Multipurpose Research Room* and B02B: Naturalistic Research Area.*

Reservation requires reserving the room specified above.

Video Grabbers
There are 2 VGA/DVI video grabbers for capturing video streams from cable boxes, smartphones, video game consoles, and VR platforms. They require potentially also checking out an appropriate adaptor for the stream output device.

Blu-Ray Burners
There is a Blu-Ray burner for burning content and storing data or stimulus materials.

Presentation Remotes
There are 4 Kensington wireless presentation remotes.

Audio Recorders
There are 3 audio recorders for data collection (e.g., interviews and focus groups) and the recording of events.

Headphones
There are 7 pairs of noise-cancelling headphones for data collection and coding.

Logitech Webcams
There are 3 Logitech c270 HD Webcams.

Cables
The following cables are available for temporary check out:
- HDMI cables of various sizes
- 3 USB 2.0 extender cables
- 115' VGA extender cable
- 1 Network LAN cable
- 1 iOS HDMI cable
- MHL to HDML adapter cable

Adaptors / Dongles
The following adaptors are available for temporary check-out:
- 4 DVI/HDM converters
- 1 USB 2.0 to DVI converter

Gaming Devices

Virtual Reality Workstation
There is a single virtual reality workstation consisting of an Alienware Tower PC, an Oculus Rift S virtual reality headset, and 2 Oculus Touch controllers in B01B: Multipurpose Research Room.*

Reservation requires reserving the room specified above.

Oculus Go
There is an Oculus Go for virtual reality immersion. Its built-in spatial audio and microphone create a unique and portable experience.

Oculus Quest
There is one Oculus Quest, an all-in-one virtual reality system for wireless use via the Oculus mobile app. Insight tracking instantly reflects user movements in VR without the need for external devices. A beyond-room scaling system allows for use in small or large spaces.

Playstation 4
There is a PlayStation 4 with 2 wireless controllers in B02B: Naturalistic Research Area.*

Reservation requires reserving the room specified above.

PlayStation 4 Virtual Reality System
There is a PlayStation 4 VR system which includes a headset, cables, a camera, and 2 PlayStation Move wireless controllers in B02B: Naturalistic Research Area.*

Reservation requires reserving the room specified above.

Publicly Available Technology

The following technology does not require reservation (first come first serve):

Single-Monitor PC Desktops
There are 5 single-monitor PC computer stations in B04D: Graduate Research Hub for BU students to use at any time.

iMacs
There are 5 iMac computer stations for editing media content and producing stimulus in B04F: Stimulus Collection/Production Lab.*

BU students must be granted card swipe access by a member of the CRC lab staff in order to access B04F.

Scanner / Printer / Copier
There is a single black and white high capacity scanner, printer, and copier available for faculty and students to use at any time in B03: Reception.

PC Computer Stations
The CRC's PC computer stations have the following software:

- Adobe AIR
- Adobe Acrobat Player
- Adobe Flash Player
- EndNote X9*
- Google Web Designer
- IBM SPSS Amos*
- IBM SPSS Statistics 25

- iTunes
- Microsoft Office Suite
- Microsoft Visual C++ 2017
- NVivo 12
- RRO
- RStudio
- SQL Server 2014

iMac Computer Stations
The CRC's iMac computer stations (in room B04F: Stimulus Collection/Production Lab) have the following software:

- Adobe AIR
- Adobe Creative Cloud 2018
    - Acrobat
    - After Effects
    - Animate
    - Audition
    - Bridge
    - Character Animator
    - Dimension
    - Dreamweaver
    - Illustrator
    - InCopy
    - InDesign
    - Lightroom
    - Lightroom Classic
    - Media Encoder
    - Photoshop
    - Prelude
    - Premiere Pro
    - Premiere Rush
- Adobe Flash Player
- Audio MIDI Setup

- DVD Player
- Ecamm Movie Tools
- EndNote X9*
- FaceTime
- Flash Player
- GarageBand
- iBooks
- iCloud
- iMovie
- iTunes
- Keynote
- NVivo12
- Microsoft Office Suite
- Migration Assistant
- Pages
- Photos
- Python
- Python3 for SPSS Statistics
- QuickTime Player
- R
- Skype
- VLC

PC Laptops
In addition to iMotions (which is available on PC Laptops 1 - 4), the CRC's PC Laptops have the following software:

- Adobe Acrobat Reader
- Adobe AIR
- Adobe Flash Player
- Bonjour
- EndNote X9*
- IBM SPSS Statistics 25
- Microsoft Office Suite

- Microsoft Visual C++ 2015
- NVivo 11
- RRO
- RStudio
- Skype
- Tableau Public 2019
- VLC

MacBook Pros
The CRC's multipurpose MacBook Pro laptops have the following software:

- Adobe Acrobat Reader
- Adobe AIR
- Adobe Flash Player
- App Store
- Audio MIDI Setup
- Dictation
- EndNote X9*

- FaceTime
- GameCenter
- iBooks
- iCloud
- iMovie
- iTunes

Virtual Reality Workstation
The VR workstation in B01B: Multipurpose Research Room has the following software:

- Oculus Rift Software
- WorldViz Vizard Virtual Reality Software

Available on select computers. Please contact the CRC staff (crc_admin-l@bu.edu) to inquire about this software.

slack

Slack is a real-time communication tool for teams, consisting of multiple channels within a shared work-space. In many ways, it represents a refined version of old-school IRC-style chatrooms. We have set up a Slack workspace for CRC-affiliated faculty and students, with the hope that this will be a useful resource for facilitating communication and collaboration around research projects. The CRC workspace is currently set up so that anyone with a BU.edu email address can join. Simply go to www.bu-crc.slack.com to set up an account. By default, new users are added to the #general, #random, and #announcements channels, but you are free to join or leave any public channels once your account is set up, as well as to create new channels to meet your needs. To join an existing private channel, you must be invited by a user who is already a member of that channel.

SnapStream

SnapStream is a television monitoring system that allows you to search, record, and monitor television programs. After recording the programs of your choice, you can view/download the entire transcript and clip the video segments. As other COM faculty and students are also recording their programs on it for research purposes, please do not to delete any of the programs.

To access SnapStream2, visit:
> snapstream2.bu.edu
> Username: crc
> Password: TV@CRC

While the recordings should stay on the server for at least several weeks, please download videos which are important to a separate fileshare for safe keeping. In order to view the recordings, you'll need to use VLC, which is free and available for Macs and PCs. If it is not already installed on your computer, please contact comhelp@bu.edu.

SONA SYSTEMS

SONA is a cloud-based research management system, to facilitate the sign-up and crediting of participants for research (e.g., surveys, focus groups, experiments, interviews, etc.) in the College of Communication. To post a research study using COM's SONA system, please contact the SONA administrator (COMSona@bu.edu) to set up an account. The COM SONA website (bucom.sona-systems.com) contains information about the times and dates of specific studies and the number of credits that will be awarded to students for participating in each study. This website will also allow researchers to manage their studies and recruit participants based on prescreened criteria. For more information about research participation and management policies through COM's SONA system, visit: sites.bu.edu/crc/research-resources/SONA/. Any questions related to the SONA system at COM can be sent to: COM-Sona@bu.edu.

Room & Technology Reservations

Technology and room reservations in the CRC are handled via QReserve. To make a reservation, you must first create an account at QReserve.com.

1. **Sign up at my.qreserve.com:**
   - Enter your Boston University e-mail address to create an account. Check your BU inbox for verification.

2. **Join the "Communication Research Center" on QReserve:**
   - After signing up and verifying your account, log in to QReserve. Fill out your profile with your first and last name, display name, and location (suggested: "Boston, MA, USA")

   - Go to the Search section in the center right of the page. Select "Boston University (Public)" under "Portal Selection." Type the keywords, "Communication Research Center" and select the CRC's account.

- Click on the "Join Site" button on two successive pages to join the CRC. Leave a message if you need to contact the CRC about QReserve resources or reservations.
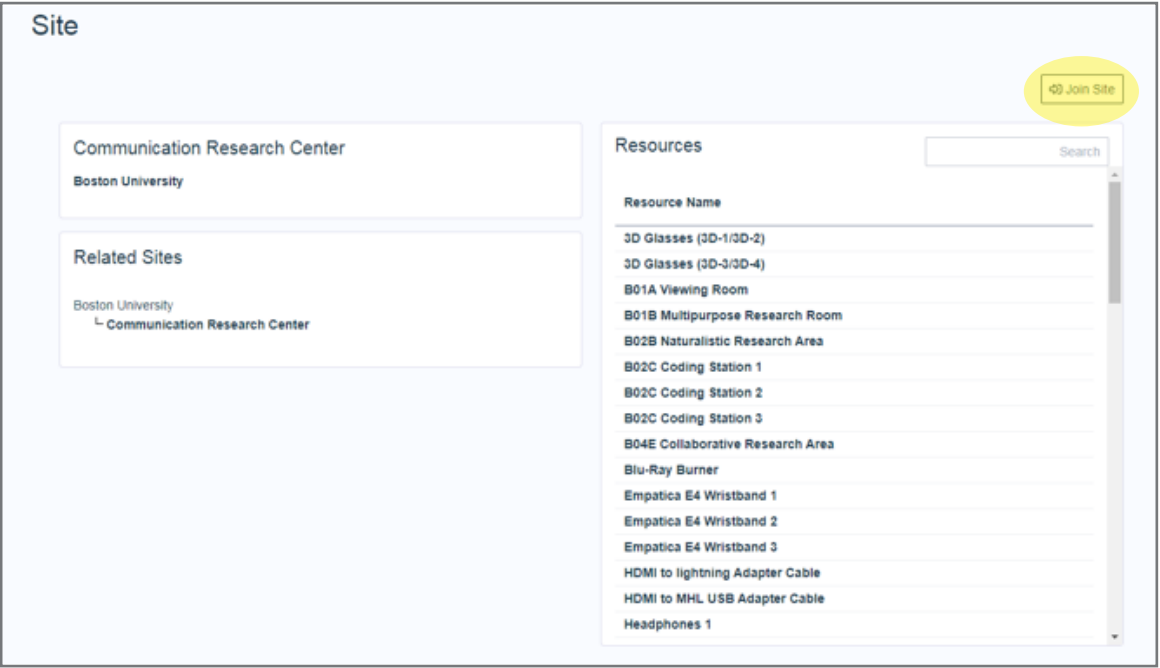
equipment or location, or scroll through to select the equipment or room you wish to reserve. Note that some devices are intentionally not loanable and can only be used at the CRC.
- Click the "View Calendar" button to view available times for reserving the desired equipment or room.
- Within the calendar, click on the desired date of reservation and fill out the reservation form with the purpose for your reservation, notes (if needed), and your name. Select the time and duration for the reservation. If you would like the reservation to recur on a daily, weekly, or monthly basis, select the proper option in the "Recurring" drop down menu and set the dates and times accordingly.
    – Pay attention to the specific requirements and descriptions of some items. Contact the CRC Lab Staff (crc-admin-l@bu.edu) if you have any questions about specific require ments.
- Click "Reserve"; a request will then be submitted to the Lab Staff for approval.
- Once a member of the CRC staff has approved your reservation, you will be able to use your equipment/room for the allotted time slot. You should receive an email confirming that your reservation has been made. If you have reserved a loanable piece of equipment, you will be able to pick it up at the CRC by having a member of the CRC staff hand it off to you.

3. **Make a reservation through QReserve:**
   Via the CRC website:
- Visit the CRC Reservations page located at sites.bu.edu/crc/research-resources/reservations/.
- Search for the desired equipment or space. You can filter resources by equipment or location or scroll through the list to select the equipment or location you wish to reserve. Note that some devices are intentionally not loanable and can only be used at the CRC.
- When you have found the resource you would like to reserve, click on "Check out in QReserve." You will then be redirected to the QReserve site.
- To log into QReserve, enter your BU email address and the password associated with your QReserve account.
- Click the "View Calendar" button to view available times for reserving the desired resource.
- Within the calendar, click on the desired date of reservation and fill out the reservation form with the purpose, notes (if needed), and your name. Select the time and duration for the reservation. If you would like the reservation to recur on a daily, weekly, or monthly basis, select the corresponding option in the "Recurring" drop down menu and set the dates and times accordingly.
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   Via the QReserve website:
- Log in to my.qreserve.com with your BU email address and associated password.
- From your dashboard, navigate to the "Memberships" tab on the left side of the page and select "Communications Research Center."

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facebook.com/BUCOMResearch

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