Syllabus

This is a single, concatenated file, suitable for printing or saving as a PDF for offline viewing. Please note that some animations or images may not work.

Description

This module is also available as a concatenated page, suitable for printing or saving as a PDF for offline viewing.

MET CS 602

Server Side Development

The Server-Side Web Development course concentrates primarily on building web applications using PHP/MySQL and Node.js/MongoDB. The course is divided into various modules covering in depth the following topics: PHP, MySQL, Object oriented PHP, PHP MVC, Secure Web applications, Node.js and MongoDB. Along with the fundamentals underlying these technologies, several applications will be showcased as case studies. Students work with these technologies starting with simple applications and then examining real world complex applications. At the end of this course, students would have mastered the web application development on the server-side.

Prerequisite Course(s)

- MET CS 601 - Web Application Development

Course Topics

The following topics are covered in this course:

- Survey of Server-Side languages
- Introduction to PHP
- Introduction to MySQL
- Object Oriented PHP
- Model-View-Controller Pattern (MVC)
- Caching
- Registry
- Routing
- AJAX
- XML
- JSON

- Web Services
- RESTful Services
- Secure PHP Programming
- Handling user input
- SQL Injection
- Cross-Site Scripting
- Remote execution
- Session Hijacking
- CAPTCHAs
- Web Applications with Node.js
- Core Node.js and Packages
- Events
- Streams
- Node.js Modules
- Express.js Framework
- Using Node.js with MongoDB
- Using Node.js with MySQL

Learning Objectives

By successfully completing this course you will be able to:

- Identify key Server-Side programming languages
- Develop secure web applications using PHP and MySQL
- Implement programs using the MVC design pattern
- Cache MySQL database queries with PHP
- Implement the Registry design pattern in PHP
- Implement URL Routing in PHP
- Utilize AJAX, XML, and JSON in web applications
- Develop programs that communicate between different systems using Web Services (including RESTful services)
- Create CAPTCHAs
- Develop web applications using Node.js along with the Express.js framework
- Interact with MongoDB and MySQL databases using Node.js

Course Outline

Module 1 - Introduction to Node.js

- Lecture 1: Web Applications with Node.js
    - Core Node.js and Packages
- Lecture 2: Events and Streams

Module 2 - Node.js Modules and Frameworks

- Lecture 3: Node.js Modules
- Lecture 4: Express.js Framework

Module 3 - Node.js and Databases

- Lecture 5: Node.js with MongoDB
- Lecture 6: Node.js with MySQL

Module 4 - Introduction to Server Side Programming

- Lecture 7: Survey of Server-Side Languages
- Lecture 8: Introduction to PHP and MySQL

Module 5 - Object Oriented Design and MVC

- Lecture 9: Object Oriented PHP and MVC (Model-View-Controller) Pattern
- Lecture 10: Caching, Registry, Routing

Module 6 - Web Services and Security

- Lecture 11: Working with AJAX, XML, and JSON.
    - Web Services and RESTful Services
- Lecture 12: Secure PHP Programming
    - User input, SQL Injection
    - Cross-Site Scripting
    - Remote execution, Session hijacking
    - CAPTCHAs

Module 7 - Term Project and Final Exam

Instructor

Dr. Suresh Kalathur

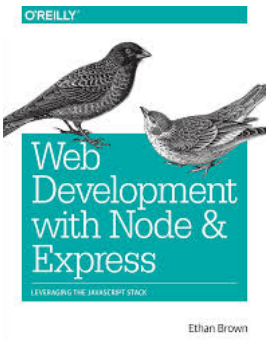
Computer Science Department
Metropolitan College
Boston University
808 Commonwealth Ave
Boston, MA 02215

Phone:617-358-0006
E-mail:kalathur@bu.edu

Professor Suresh Kalathur obtained his Doctorate from Brandeis University specializing in constraint programming languages. He has over 10 years of industry experience and was principal investigator for building an autonomous agent system and a fuzzy logic system. Prior to joining Boston University as a full time faculty member, Suresh Kalathur was an adjunct faculty at Brandeis University, Boston University Metropolitan College, Tufts University, and Worcester Polytechnic Institute. Now, as a full time faculty member, he teaches courses Grid Computing, Data Mining, Computer and Software Security, Object Oriented Analysis and Design, Design Patterns, Enterprise Java Programming, Web Services, Operating Systems, and Compiler Design.

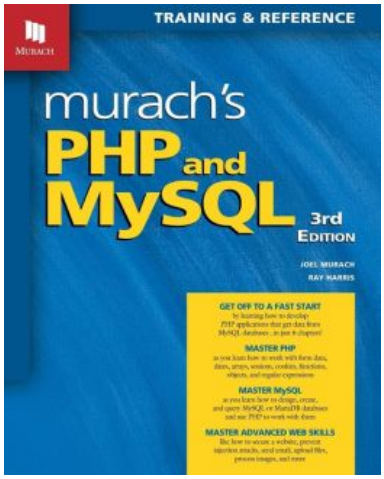
Materials

Required Books



Web Development with Node and Express: Leveraging the JavaScript Stack , by Ethan Brown, O'Reilly, 2014. ISBN13: 978-1491949306.

This book can be purchased from Barnes and Noble at Boston University.



Murach's PHP and MySQL 3rd Edition, by Joel Murach and Ray Harris, Murach, 2017. ISBN13: 978-1943872381.

This book can be purchased from Barnes and Noble at Boston University.

Required Software and Services

- The latest versions of Mozilla Firefox and Google Chrome web browsers.
- You will need an advanced plain text editor or integrated development environment

(IDE) that supports PHP and JavaScript. Suitable examples include:

- Notepad++
- Sublime Text
- Netbeans
- Aptana Studio
- Komodo Edit
- Zend Studio
- Eclipse
- Any other plain text editor or IDE that supports syntax highlighting for PHP and JavaScript
- You will also need to have access to a web server that supports PHP, MySQL, Node.js, Express.js, and MongoDB. You have a couple of options here:
  - Host your own on your local machine (via WAMP, MAMP, or XAMPP along with Node.js, Express.js and MongoDB installed.
  - Pay for a shared web hosting service that supports the required technologies listed above.
  - Use the Professor's server that can provide you with a free hosting account

Boston University Library Information

Boston University has created a set of videos to help orient you to the online resources at your disposal. An introduction to the series is below:

met_ode_library_14_sp1_00_intro video cannot be displayed here

All of the videos in the series are available on the Online Library Resources page, which is also accessible from the Campus Bookmarks section of your Online Campus Dashboard. Please feel free to make use of them.

As Boston University students, you have full access to the BU Library. From any computer, you can gain access to anything at the library that is electronically formatted. To connect to the library, use the link http://www.bu.edu/library. You may use the library's content whether you are connected through your online course or not, by confirming your status as a BU community member using your Kerberos password.

Once in the library system, you can use the links under “Resources” and “Collections” to find databases, eJournals, and eBooks, as well as search the library by subject. Some other useful links follow:

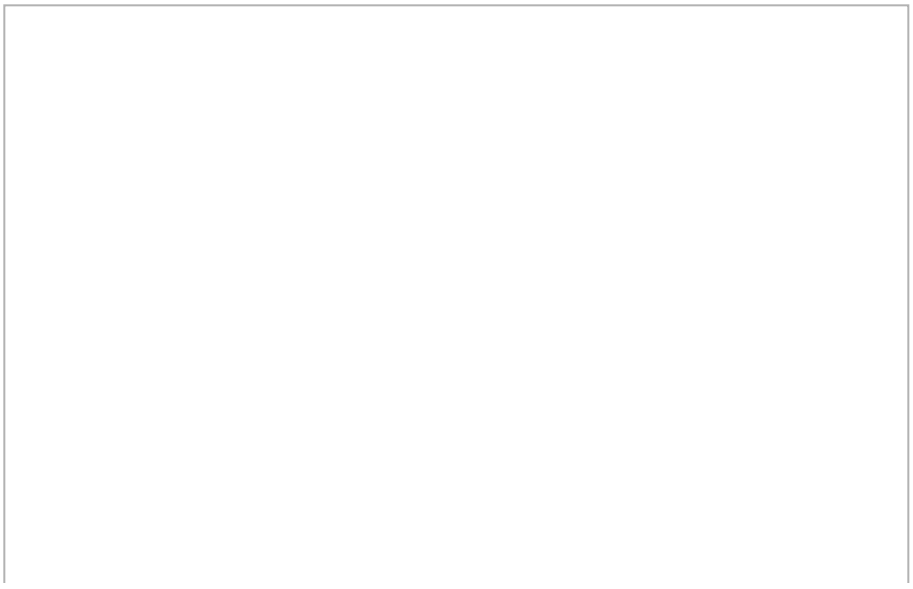
> Go to http://www.bu.edu/library/research/collections to access eBooks and eJournals directly.
>
> If you have questions about library resources, go to http://www.bu.edu/library/help/ask-a-librarian to email the library or use the live-chat feature.
>
> To locate course eReserves, go to http://www.bu.edu/library/services/reserves.

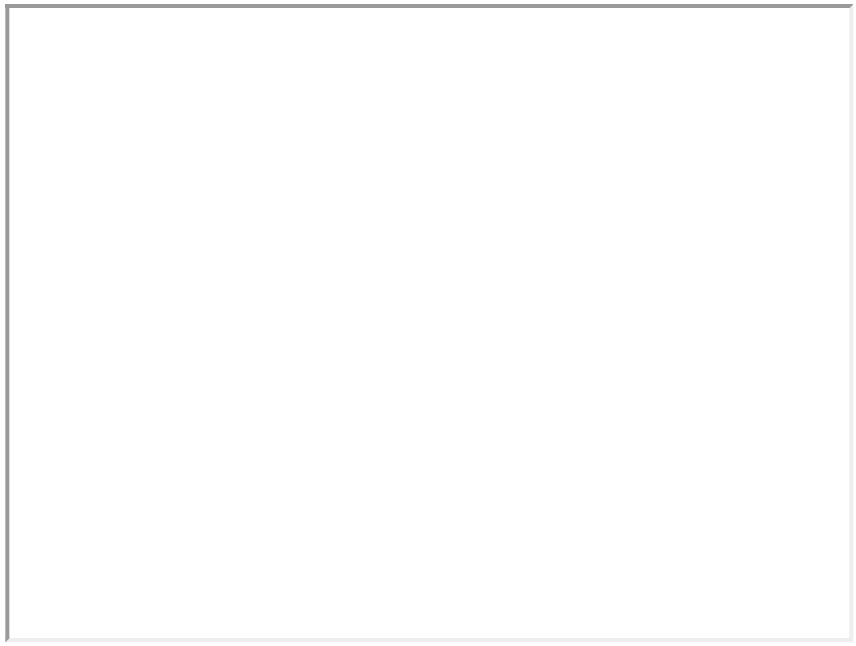
Please note that you are not to post attachments of the required or other readings in the water cooler or other areas of the course, as it is an infringement on copyright laws and department policy. All students have access to the library system and will need to develop research skills that include how to find articles through library systems and databases.

Free Tutoring Service

Free online tutoring with SMARTHINKING is available to BU online students for the duration of their courses. The tutors do not rewrite assignments, but instead teach students how to improve their skills in the following areas: writing, math, sciences, business, ESL, and Word/Excel/PowerPoint.

You can log in directly to SMARTHINKING from Online Campus by using the link in the left-hand navigation menu of your course.





YouTube

Please Note

The SMARTHINKING service can be used for Boston University online class work only. Use of this service for personal purposes or for anything other than Boston University online class work will result in deactivation of your SMARTHINKING account.

Study Guide

Module 1 Study Guide and Deliverables

Readings:	Brown: Chapters 1-3
Discussions:	Discussion 1 Due: Tuesday, January 23 at 6:00 AM ET
Assignments:	Assignment 1 Due: Tuesday, January 23 at 6:00 AM ET
Live Classrooms:	Wednesday, January 17, 8:00 - 10:00 PM ET

Module 2 Study Guide and Deliverables

Readings: Brown: Chapters 6-9

Discussions: Discussion 2 Due: Tuesday, January 30 at 6:00 AM ET

Assignments: Assignment 2 Due: Tuesday, January 30 at 6:00 AM ET

Live Classrooms: Wednesday, January 24, 8:00 - 10:00 PM ET

Module 3 Study Guide and Deliverables

Readings: Brown: Chapters 13-17

Discussions: Discussion 3 Due: Tuesday, February 6 at 6:00 AM ET

Assignments: Assignment 3 Due: Tuesday, February 6 at 6:00 AM ET

Live Classrooms: Wednesday, January 31, 8:00 - 10:00 PM ET

Module 4 Study Guide and Deliverables

Readings: Murach's PHP and MySQL: Chapters 1-4 & 16-18

Discussions: Discussion 4 Due: Tuesday, February 13 at 6:00 AM ET

Assignments: Assignment 4 Due: Tuesday, February 13 at 6:00 AM ET

Term Project: Term Project Milestone: Additional Feature Selections Due Tuesday, February 13 at 6:00 AM ET

Live Classrooms: Wednesday, February 7, 8:00 - 10:00 PM ET

Module 5 Study Guide and Deliverables

Readings: Murach's PHP and MySQL: Chapters 5, 14, & 19

Discussions: Discussion 5 Due: Tuesday, February 20 at 6:00 AM ET

Assignments: Assignment 5 Due: Tuesday, February 20 at 6:00 AM ET

Live Classrooms: Wednesday, February 14, 8:00 - 10:00 PM ET

Module 6 Study Guide and Deliverables

Readings: Murach's PHP and MySQL: Chapters 12 & 21

Discussions: Discussion 6 Due: Tuesday, February 27 at 6:00 AM ET

Assignments: Assignment 6 Due: Tuesday, February 27 at 6:00 AM ET

Term Project: Term Project Due: Thursday, March 1 at 11:59 PM ET

Live Classrooms: Wednesday, February 21, 8:00 - 10:00 PM ET

Important: Final Exam

You will be responsible for setting up your own appointment with an approved proctoring option. This exam will be three hours in length and will cover material from the entire course. Further information about the testing centers will be forthcoming from the exam coordinator.

Final Exam Details

The Final Exam is a proctored exam available from **Wednesday, February 28 at 8:00 AM ET to Saturday, March 3 at 11:59 PM ET**. The Computer Science department requires that all final exams be proctored. **Also, please keep in mind that your term Project is Due: Thursday, March 1.**

The exam is a three-hour open-book exam consisting of essay questions. It will only be accessible during the final exam period. You can access it from either the Assessments section of the course or from the Final Exam module on the home page. Your proctor will enter the password to start the exam.

You will receive a technical support hotline number before the start of the exam. Please bring this number with you to the exam.

Grading Information

The course grade will be based on active class participation and discussions, programming assignments, a proctored final exam, and a term project. Assignments are expected to be submitted by their respective due dates. Late submissions may carry a penalty.

Grading Policy

All students will be expected to demonstrate competency of the languages and concepts covered in this course.

Grading Structure and Distribution

The grade for the course is determined by the following:

- Final Exam: 30%
- Term Project: 30%
- Assignments: 30%
- Discussions: 10%

Final Course Grade

The following ranges determine the final course grade:

Letter Grade	Final Percentage Score
A	100-96
A-	95-91
B+	90-86
B	85-81
B-	80-76
C+	75-71
C	70-66
C-	65-61
D	60-56
F	55-0

The percentage ranges above are approximate. Your letter grade is determined by your professor as the best overall measure of how well you have demonstrated that you understand the material, taking into separate consideration your performance with the assignments, term project, discussions and final exam. The final grade *may* be curved at the discretion of the Instructor

Proctored Final Exam

There will be a proctored Final Exam for this course. You will be responsible for scheduling your own appointment with an approved proctoring option. Detailed instructions about setting up an appointment will be forthcoming from the proctored exam coordinator.

Expectations

Many learning activities require sharing your assignments and opinions with your classmates. For example, you may be given a set of criteria on the basis of which to evaluate other classmates' assignments, and asked to submit the results to your facilitatorinstructor by a specified day of the week. It is, therefore, very important that you, as well as your classmates, submit your assignments on a timely basis. Timely submission by all will result in each of you being able to evaluate each other's assignments. Due dates will be indicated for each assignment in the Assignments section of the course.

Delays

If, for any reason, you are unable to meet any assignment deadline, contact your facilitatorinstructor. All times mentioned in the course (unless otherwise specified) are in Eastern Time. All assignments must be completed and must be turned in by their due dates and due times. Extensions may be granted, though only under mitigating circumstances.

Late Work Policy: Late assignments are subject to a grade reduction penalty that is at the discretion of the instructor or your facilitator. Any assignment that is five or more days late will automatically be scored at zero points.

Academic Conduct Policy

Please visit Metropolitan College's website for the full text of the department's *Academic Conduct Code*.

A Definition of Plagiarism

> "The academic counterpart of the bank embezzler and of the manufacturer who mislabels products is the plagiarist: the student or scholar who leads readers to believe that what they are reading is the original work of the writer when it is not. If it could be assumed that the distinction between plagiarism and honest use of sources is perfectly clear in everyone's mind, there would be no need for the explanation that follows; merely the warning with which this definition concludes would be enough. But it is apparent that sometimes people of goodwill draw the suspicion of guilt upon themselves (and, indeed, are guilty) simply because they are not aware of the illegitimacy of certain kinds of "borrowing" and of the procedures for correct identification of materials other than those gained through independent research and reflection."
>
> "The spectrum is a wide one. At one end there is a word-for-word copying of another's writing without enclosing the copied passage in quotation marks and identifying it in a footnote, both of which are necessary. (This includes, of course, the copying of all or any part of another student's paper.) It hardly seems possible that anyone of college age or more could do that without clear intent to deceive. At the other end there is the almost casual slipping in of a particularly apt term which one has come across in reading and which so aptly expresses one's opinion that one is tempted to make it personal property."
>
> "Between these poles there are degrees and degrees, but they may be roughly placed in two groups. Close to outright and blatant deceit-but more the result, perhaps, of laziness than of bad intent-is the patching together of random jottings made in the course of reading, generally without careful identification of their source, and then woven into the text, so that the result is a mosaic of other people's ideas and words, the writer's sole contribution being the cement to hold the pieces together. Indicative of more effort and, for that reason, somewhat closer to honest, though still dishonest, is the paraphrase, and abbreviated (and often skillfully prepared) restatement of someone else's analysis or conclusion, without acknowledgment that another person's text has been the basis for the recapitulation."

The paragraphs above are from H. Martin and R. Ohmann, *The Logic and Rhetoric of Exposition, Revised Edition.* Copyright 1963, Holt, Rinehart and Winston.

Academic Conduct Code

I. **Philosophy of Discipline**

The objective of Boston University in enforcing academic rules is to promote a community atmosphere in which learning can best take place. Such an atmosphere can be maintained only so long as every student believes that his or her academic competence is being judged fairly and that he or she will not be put at a disadvantage because of someone else's dishonesty. Penalties should be carefully determined so as to be no more and no less than required to maintain the desired atmosphere. In defining violations of this code, the intent is to protect the integrity of the educational process.

II. **Academic Misconduct**

Academic misconduct is conduct by which a student misrepresents his or her academic accomplishments, or impedes other students' opportunities of being judged fairly for their academic work. Knowingly allowing others to represent your work as their own is as serious an offense as submitting another's work as your own.

III. **Violations of this Code**

Violations of this code comprise attempts to be dishonest or deceptive in the performance of academic work in or out of the classroom, alterations of academic records, alterations of official data on paper or electronic resumes, or unauthorized collaboration with another student or students. Violations include, but are not limited to:

A. **Cheating on examination**. Any attempt by a student to alter his or her performance on an examination in violation of that examination's stated or commonly understood ground rules.
B. **Plagiarism.** Representing the work of another as one's own. Plagiarism includes but is not limited to the following: copying the answers of another student on an examination, copying or restating the work or ideas of another person or persons in any oral or written work (printed or electronic) without citing the appropriate source, and collaborating with someone else in an academic endeavor without acknowledging his or her contribution. Plagiarism can consist of acts of commission-appropriating the words or ideas of another-or omission failing to acknowledge/document/credit the source or creator of words or ideas (see below for a detailed definition of plagiarism). It also includes colluding with someone else in an academic endeavor without acknowledging his or her contribution, using audio or video footage that comes from another source (including work done by another student) without permission and acknowledgement of that source.
C. **Misrepresentation or falsification of data** presented for surveys, experiments, reports, etc., which includes but is not limited to: citing authors that do not exist; citing interviews that never took place, or field work that was not completed.
D. **Theft of an examination**. Stealing or otherwise discovering and/or making known to others the contents of an examination that has not yet been administered.
E. **Unauthorized communication during examinations**. Any unauthorized communication may be considered prima facie evidence of cheating.
F. **Knowingly allowing another student to represent your work as his or her own**. This includes providing a copy of your paper or laboratory report to another student without the explicit permission of

the instructor(s).

G. **Forgery, alteration, or knowing misuse of graded examinations, quizzes, grade lists, or official records of documents**, including but not limited to transcripts from any institution, letters of recommendation, degree certificates, examinations, quizzes, or other work after submission.
H. **Theft or destruction of examinations or papers** after submission.
I. **Submitting the same work in more than one course** without the consent of instructors.
J. **Altering or destroying another student's work or records**, altering records of any kind, removing materials from libraries or offices without consent, or in any way interfering with the work of others so as to impede their academic performance.
K. **Violation of the rules governing teamwork**. Unless the instructor of a course otherwise specifically provides instructions to the contrary, the following rules apply to teamwork: 1. No team member shall intentionally restrict or inhibit another team member's access to team meetings, team work-in-progress, or other team activities without the express authorization of the instructor. 2. All team members shall be held responsible for the content of all teamwork submitted for evaluation as if each team member had individually submitted the entire work product of their team as their own work.
L. **Failure to sit in a specifically assigned seat during examinations.**
M. **Conduct in a professional field assignment that violates the policies and regulations of the host school or agency.**
N. **Conduct in violation of public law occurring outside the University that directly affects the academic and professional status of the student, after civil authorities have imposed sanctions.**
O. **Attempting improperly to influence the award of any credit, grade, or honor.**
P. **Intentionally making false statements to the Academic Conduct Committee or intentionally presenting false information to the Committee.**
Q. **Failure to comply with the sanctions imposed under the authority of this code.**

Important Message on Final Exams

Dear Boston University Computer Science Online Student,

As part of our ongoing efforts to maintain the high academic standard of all Boston University programs, including our online MSCIS degree program, the Computer Science Department at Boston University's Metropolitan College requires that each of the online courses includes a proctored final examination.

By requiring proctored finals, we are ensuring the excellence and fairness of our program. The final exam is administered online, and the access will be available at the exam sites.

Specific information regarding final-exam scheduling will be provided approximately two weeks into the course. This early notification is being given so that you will have enough time to plan for where you will take the final exam.

I know that you recognize the value of your Boston University degree and that you will support the efforts of the University to maintain the highest standards in our online degree program.

Thank you very much for your support with this important issue.

Regards,

Professor Lou Chitkushev, Ph.D.
Associate Dean for Academic Affairs
Boston University Metropolitan College

Microsoft Imagine for Academic Institutions

Metropolitan College is a member of Microsoft Imagine for Academic Institutions (formerly DreamSpark), a Microsoft program that supports technical education by providing access to Microsoft software for learning, teaching, and research purposes. Our membership allows faculty and students currently enrolled in MET courses to obtain certain Microsoft products free of charge. All MET students are granted access to download the software for the duration of their study at MET College.

FAQ and basic information are at: http://www.bu.edu/metit/hw-and-sw/msdn-academic-alliance-software-center/.

Who's Who: Roles and Responsibilities

You will meet many BU people in this course and program. Some of these people you will meet online, and some you will communicate with by email and telephone. There are many people behind the scenes, too, including instructional designers, faculty who assist with course preparation, and video and animation specialists.

People in Your Online Course in Addition to Your Fellow Students

Your Facilitator. Our classes are divided into small groups, and each group has its own facilitator. We carefully select and train our facilitators for their expertise in the subject matter and their excellence in teaching. Your facilitator is responsible for stimulating discussions in pedagogically useful areas, for answering your questions, and for grading homework assignments, discussions, term projects, and any manually graded quiz or final-exam questions. If you ask your facilitator a question by email, you should get a response within 24 hours, and usually faster. If you need a question answered urgently, post your question to one of the urgent help topics, where everyone can see it and answer it.

Your Professor. The professor for your course has primary responsibility for the course. If you have any questions that your facilitator doesn't answer quickly and to your satisfaction, then send your professor an email in the course, with a cc to your facilitator so that your facilitator is aware of your question and your professor's response.

Your Faculty and Student Support Administrator, Jeff Behn. Jeff is here to ensure you have a positive online experience. You will receive emails and announcements from him throughout the semester. Jeff represents Boston University's university services and works for the Office of Distance Education. He prepares students for milestones such as course launch, final exams, and course evaluations. He is a resource to both students and faculty. For example, he can direct your university questions and concerns to the appropriate party. He also handles general questions regarding Online Campus functionality for students, faculty, and facilitators, but he does not provide tech support. He is enrolled in all classes and can be contacted within the course through Online Campus email as it is running. You can also contact him by external email at jeffbehn@bu.edu or call (617) 358-1985.

People Not in Your Online Course

Although you will not normally encounter the following people in your online course, they are central to the program. You may receive emails or phone calls from them, and you should feel free to contact them.

Your Computer Science Department Online Program Coordinator, Peter Mirza. Peter administers the academic aspects of the program, including admissions and registration. You can ask him questions about the program, registration, course offerings, graduation, or any other program-related topic. He can be reached at metcsol@bu.edu or (617) 353-2566.

Your Computer Science Department Program Manager, Kim Richards. Kim is responsible for administering most aspects of the Computer Science Department. You can reach Kim at kimrich@bu.edu or (617) 353-2566.

Andrew Gorlin, Academic Advisor. Reviews requests for transfer credits and waivers. Advises students on which courses to take to meet their career goals. You can reach Andrew at asgorlin@bu.edu, or (617)-353-2566.

Professor Anatoly Temkin, Computer Science Department Chairman. You can reach Professor Temkin at temkin@bu.edu or at 617-353-2566.

Professor Lou T. Chitkushev, Associate Dean for Academic Affairs, Metropolitan College. Dr. Chitkushev is responsible for the academic programs of Metropolitan College. Contact Professor Chitkushev with any issues that you feel have not been addressed adequately. The customary issue-escalation sequence after your course facilitator and course faculty is Professor Temkin, and then Professor Chitkushev.

Professor Tanya Zlateva, Metropolitan College Dean Dr. Zlateva is responsible for the quality of all the academic programs at Boston University Metropolitan College.

Disability Services

In accordance with University policy, every effort will be made to accommodate unique and special needs of students with respect to speech, hearing, vision, or other disabilities. Any student who feels he or she may need an accommodation for a documented disability should contact the Office of Disability Services at (617) 353-3658 or at access@bu.edu for review and approval of accommodation requests.

Netiquette

The Office of Distance Education has produced a netiquette guide to help you understand the potential impact of your communication style.

Before posting to any discussion forum, sending email, or participating in any course or public area, please consider the following:

Ask Yourself…

- How would I say this in a face-to-face classroom or if writing for a newspaper, public blog, or wiki?
- How would I feel if I were the reader?
- How might my comment impact others?
- Am I being respectful?
- Is this the appropriate area or forum to post what I have to say?

Writing

When you are writing, please follow these rules:

- **Stay polite and positive in your communications**. You can and should disagree and participate in discussions with vigor; however, when able, be constructive with your comments.
- **Proofread your comments before you post them.** Remember that your comments are permanent.
- **Pay attention to your tone.** Without the benefit of facial expressions and body language your intended tone or the meaning of the message can be misconstrued.
- **Be thoughtful and remember that classmates' experience levels may vary.** You may want to include background information that is not obvious to all readers.
- **Stay on message.** When adding to existing messages, try to maintain the theme of the comments previously posted. If you want to change the topic, simply start another thread rather than disrupt the current conversation.
- **When appropriate, cite sources.** When referencing the work or opinions of others, make sure to use correct citations.

Reading

When you are reading your peers' communication, consider the following:

- **Respect people's privacy.** Don't assume that information shared with you is public; your peers may not want personal information shared. Please check with them before sharing their information.
- **Be forgiving of other students' and instructors' mistakes.** There are many reasons for typos and misinterpretations. Be gracious and forgive other's mistakes or privately point them out politely.

- **If a comment upsets or offends you, reread it and/or take some time before responding.**

Important Note

Don't hesitate to let your instructor or your faculty and student support administrator know if you feel others are inappropriately commenting in any forum.

All Boston University students are required to follow academic and behavioral conduct codes. Failure to comply with these conduct codes may result in disciplinary action.

Registration Information and Important Dates

View the drop dates for your course.

Withdraw or drop your course.

- If you are dropping down to zero credits for a semester, please contact your college or academic department.
- **Nonparticipation in your online course does not constitute a withdrawal from the class.**
- If you are unable to drop yourself on student link please contact your college or academic department.

Technical Support

Experiencing issues with BU websites or Blackboard?

It may be a system-wide problem. Check the BU Information Services & Technology (IS&T) news page for announcements.

Boston University technical support is available via email (ithelp@bu.edu), the support form, and phone (888-243-4596). Please note that the IT Help Center has multiple locations. All locations can be reached through the previously mentioned methods. For IT Help Center hours of operation please visit their contact page. For other times, you may still submit a support request via email, phone, or the support form, but your question won't receive a response until the following day. If you aren't calling, it is highly recommended that you submit your support request via the technical-support form as this provides the IS&T Help Center with the best information in order to resolve your issue as quickly as possible.

Examples of issues you might want to request support for include the following:

- Problems viewing or listening to sound or video files
- Problems accessing internal messages
- Problems viewing or posting comments
- Problems attaching or uploading files for assignments or discussions
- Problems accessing or submitting an assessment

To ensure the fastest possible response, please fill out the online form using the link below:

IT Help Center Support
888-243-4596 or 617-353-4357 or Web
Check your open tickets using BU's ticketing system.

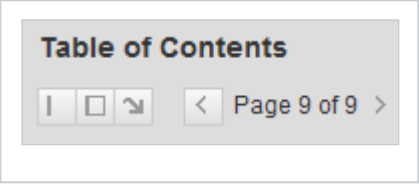
Navigating Courses

For best results when navigating courses, it is recommended that you use the Mozilla Firefox browser.

The Table of Contents may contain folders. These folders open and close (+ and − signs) and may conceal some pages. To avoid missing content pages, you are advised to use the next- and previous-page buttons (and icons) in the top-right corner of the learning content.

Please also familiarize yourself with the navigation tools, as shown below; these allow you to show and hide both the Course Menu and the Table of Contents on the left. This will be helpful for freeing up screen space when moving through the weekly lecture materials.

Navigation tools for the Table of Contents are shown in the image below:



Clicking on the space between the Course Menu and the Table of Contents allows you to show or hide the Course Menu on the left:

Web Resources/Browser Plug-Ins

To view certain media elements in this course, you will need to have several browser plug-in applications installed on your computer. See the Course Resources page in the syllabus of each individual course for other specific software requirements.

- Check your computer's compatibility by reviewing Blackboard's System Requirements
- Check your browser settings with Blackboard's Connection Test
- Download most recent version of Adobe Flash Player
- Download most recent version of Adobe Acrobat Reader

How to Clear Your Browser Cache

The IT Help Center recommends that you periodically clear your browser cache to ensure that you are viewing the most current content, particularly after course or system updates.

This page is also found within the "How to…" section of the online documentation, which contains a list of some of the most common tasks in Blackboard Learn.

Boston University Metropolitan College