



**College of Education and Human Development
Division of Special Education and disAbility Research**

Summer 2024

EDSE 621 002: Applied Behavior Analysis: Empirical Bases

CRN: 40365, 3 – Credits

Instructor: Theodore A. Hoch, B.C.B.A., L.B.A, L.P.C., L.A.P.	Meeting Dates: 6/28/24 - 8/15/24
Phone: 703-987-8928 (you may also text here)	Meeting Day(s): Online
Email: thoch@gmu.edu	Meeting Time(s): NA
Office Hours: by appointment	Meeting Location: NA
Office Location: Suite 100, Finley Bldg., GMU Fairfax Campus, and virtual	

Note: This syllabus may change according to class needs. Teacher Candidates/Students will be advised of any changes immediately through George Mason e-mail and/or through Blackboard.

Prerequisite(s):

EDSE 619 B- or XS (may be taken concurrently)

Course Overview

Focuses on measurement, data display, data interpretation, and experimental design in applied behavior analysis. Prepares candidates to design and use data collection systems, apply data-based decision making, and appropriately deploy single-subject experimental designs in applied situations. Enables candidates to become informed consumers of behavior analytic research.

Advising Contact Information

Please make sure that you are being advised on a regular basis as to your status and progress through your program. Mason M.Ed. and Certificate teacher candidates/students should contact Student Services at 1-844-306-1785, mason@support.edu.help for assistance.

Advising Tip

Have you met with an advisor? All students should make an appointment to meet with an advisor to outline a plan for completing coursework and non-course requirements such as

testing. To make an appointment by phone or in person, go to <http://gse.gmu.edu/special-education/advising/>.

Course Delivery Method

Learning activities include the following:

1. Class lecture and discussion
2. Application activities
3. Small group activities and assignments
4. Video and other media supports
5. Research and presentation activities
6. Electronic supplements and activities via Blackboard

This course will be delivered online (76% or more) using an asynchronous format via the Blackboard Learning Management system (LMS) housed in the MyMason portal. You will log in to the Blackboard (Bb) course site using your Mason email name (everything before @masonlive.gmu.edu) and Patriot Pass password. The course site will be available in accordance with the posted start date.

Under no circumstances, may candidates/students participate in online class sessions (either by phone or Internet) while operating motor vehicles. Further, as expected in a face-to-face class meeting, such online participation requires undivided attention to course content and communication.

Technical Requirements

To participate in this course, students will need to satisfy the following technical requirements:

- High-speed Internet access with standard up-to-date browsers. To get a list of Blackboard's supported browsers see: [Browser support \(https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers\)](https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers)
- To get a list of supported operation systems on different devices see: [Tested devices and operating systems \(https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems\)](https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems)
- Students must maintain consistent and reliable access to their GMU email and Blackboard, as these are the official methods of communication for this course.

- Students may be asked to create logins and passwords on supplemental websites and/or to download trial software to their computer or tablet as part of course requirements.
- The following software plug-ins for PCs and Macs, respectively, are available for free download:
 - [Adobe Acrobat Reader \(https://get.adobe.com/reader/\)](https://get.adobe.com/reader/)
 - [Windows Media Player \(https://support.microsoft.com/en-us/help/14209/get-windows-media-player\)](https://support.microsoft.com/en-us/help/14209/get-windows-media-player)
 - [Apple Quick Time Player \(www.apple.com/quicktime/download/\)](http://www.apple.com/quicktime/download/)
- Technical Support 24/7
 - chat: <https://support.edu.help>
 - call: 1-844-306-1785
 - e-mail: Mason@support.edu.help

Expectations

- Course Week:
Because asynchronous courses do not have a “fixed” meeting day, our week will start on Friday, and finish at 11:59pm EST on Thursday.
- Log-in Frequency:
Students must actively check the course Blackboard site and their GMU email for communications from the instructor, class discussions, and/or access to course materials at least [#] times per week. In addition, students must log-in for all scheduled online synchronous meetings with your small group.
- Participation:
Students are expected to actively engage in all course activities throughout the semester, which includes viewing all course materials, completing course activities and assignments, and participating in course discussions and group interactions.
- Technical Competence:
Students are expected to demonstrate competence in the use of all course technology. Students who are struggling with technical components of the course are expected to seek assistance from the instructor and/or College or University technical services.
- Technical Issues:
Students should anticipate some technical difficulties during the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.
- Workload:

Please be aware that this course is **not** self-paced. Students are expected to meet *specific deadlines* and *due dates* listed in the **Class Schedule** section of this syllabus. It is the student's responsibility to keep track of the module-based course schedule of topics, readings, activities and assignments due.

- Instructor Support:

Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues. Those unable to come to a Mason campus can meet with the instructor via telephone or web conference. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times.

- Netiquette:

The course environment is a collaborative space. Experience shows that even an innocent remark typed in the online environment can be misconstrued. Students must always re-read their responses carefully before posting them, so as others do not consider them as personal offenses. *Be positive in your approach with others and diplomatic in selecting your words.* Remember that you are not competing with classmates but sharing information and learning from others. All faculty are similarly expected to be respectful in all communications.

- Accommodations:

Online learners who require effective accommodations to ensure accessibility must be registered with George Mason University Disability Services.

Learner Outcomes

Outcomes for this course are taken from the Behavior Analyst Certification Board's *Fifth Edition Task List* Sections C (Measurement, Data Display, and Interpretation) and D (Experimental Design). This course is designed to enable students to do the following:

1. Establish operational definitions of behavior.
2. Distinguish among direct, indirect, and product measures of behavior.
3. Measure occurrence (frequency, rate, percentage), temporal dimensions (duration, latency, interresponse time), and form and strength (topography, magnitude); and trials to criterion.
4. Design and implement sampling procedures (i.e., interval recording, time sampling).
5. Evaluate the validity and reliability of measurement procedures.
6. Select a measurement system to obtain representative data given the dimensions of behavior and the logistics of observing and recording.
7. Graph data to communicate relevant quantitative relations (e.g., equal interval graphs, bar graphs, cumulative records, standard celebration charts).
8. Interpret graphed data.
9. Distinguish between dependent and independent variables, and between internal and external validity.
10. Identify defining features of single-subject experimental design (e.g., individuals serve as

their own controls, repeated measures, prediction, verification, and replication).

11. Describe advantages of single-subject experimental designs compared to group designs.

12. Use single subject experimental designs.

13. Describe rationales for conducting comparative, component, and parametric analyses.

The content of the course is derived from the Fifth Edition Task List published by the Behavior Analyst Certification Board (BACB) as well as the BACB's *Ethics Code for Behavior Analysts*. The Professional and Ethical Compliance Code for Behavior Analysts is listed on the following website: <https://www.bacb.com/wp-content/uploads/2020/11/Ethics-Code-for-Behavior-Analysts-210902.pdf>. For more information on the Board and the examination, please visit the Board's website at www.bacb.com.

Required Texts

Cooper, J. O., Heron, T. E., & Heward, W. L. (2019). *Applied Behavior Analysis* (3rd ed). Upper Saddle River, NJ: Merrill/Prentice Hall. ISBN 0134752554.

Recommended Texts

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). <https://doi.org/10.1037/0000165-000>

Required Resources

Go to the Behavior Analyst Certification Board website (www.bacb.com) and download the 5th edition Task List as a reference resource for this course.

Additional Readings

Dermer, M.L., & Hoch, T.A. (1999). Improving descriptions of single-subject experiments in research texts written for undergraduates. *The Psychological Record*, 49, 49-66.

Diaz, J.E., Luoma, S.M., & Miguel, C.F. (2020). The role of verbal behavior in the establishment of comparative relations. *Journal of the Experimental Analysis of Behavior*, 113 (2), 322-339.

Hochmuth, J.M., Crowley-Koch, B.M., & Van Houten, R. (2020). Examining generalization of motorist yielding at an adjacent crosswalk with variations of the gateway sign configuration. *Journal of Applied Behavior Analysis*, 53 (4), 2053-2066.

Jiminez-Gomez, C., Haggerty, K., and Topcuoglu, B. (2021). Wearable activity schedules promote independence in young children. *Journal of Applied Behavior Analysis*, 54 (1), 197-216.

Mace, F.C., McComas, J.J., Mauro, B.C., Progar, P.R., Taylor, B., Ervin, R., & Zangrillo, A.N. (2010). Differential reinforcement of alternative behavior increases resistance to extinction: Clinical demonstration, animal modeling, and clinical test of one solution. *Journal of the Experimental Analysis of Behavior*, 93 (3), 349-367.

Metoyer, C.N., Fritz, J.N., Hunt, J.C., & Fletcher, V.L. (2020). Teaching caregivers to respond safely during agitated states before aggression using simulation training. *Journal of the Applied Behavior Analysis*, 53 (4), 2250-2259.

Miguel, C.F., Frampton, S.E., Lantanya, C.A., LaFrance, D.L., Quah, K., Meyer, C.S., Elias, N.C., & Fernand, J.K. (2015). The effects of tact training on the development of analogical reasoning. *Journal of the Experimental Analysis of Behavior*, 104 (2), 96-118.

Ribeiro, D.M., Miguel, C.F., & Goyos, C. (2015). The effects of listener training on discriminative control by elements of compound stimuli in children with disabilities. *Journal of the Experimental Analysis of Behavior*, 104 (1), 48-62.

Shea, K.A., Sellers, T.P., Smith, S.G., & Bullock, A.J. (2020). Self-guided behavioral skills training: A public health approach to promoting nurturing care environments. *Journal of Applied Behavior Analysis*, 53 (4), 1889-1903.

Sundberg, C.T., Sundberg, M.L., & Michael, J. (2018). Covert verbal mediation in arbitrary matching to sample. *Journal of the Experimental Analysis of Behavior*, 109 (3), 600-623.

Ward, S.N., Hanley, G.P., Warner, C.A., & Gage, E.E. (2021). Does teaching an omnibus mand preclude the development of specifying mands? *Journal of Applied Behavior Analysis*, 54 (1), 248-269.

Course Performance Evaluation

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, VIA, hard copy).

Assignments and Examinations

Final Exam: 50 points

A 50-item final exam is used to test knowledge of measurement and experimental design concepts. Each correct response to a multiple choice question will earn 1 point. Each correct response on the graphing portion of the test will also earn one point.

Experimental Design Replication and Extension Projects (EDRE): 60 points (2 @ 30 points each)

This is one of two types of group assignment in this course. You will be assigned to a group during the first week of the course. Your group will be given two articles from the behavior analytic literature: one from the Experimental Analysis of Behavior, and one from Applied Behavior Analysis. Given these, your group will develop a replication and extension study for each, and will submit a draft of the assigned components for feedback each week, as indicated in the course calendar. These components are:

- Development of the experimental question to be examined by the replication and extension experiment, based on the recommendations in the discussion section of the original study.
- Operational definition of the dependent variable.
- Development of a measurement system for the dependent variable.
- Specification of the independent variable(s).
- Selection of a single subject experimental design that will permit examination of the experimental question.
- Step by step procedural implementation instructions for the independent variable(s) in the context of the selected single subject experimental design.
- Step by step procedural instructions (including calculations) for determining interobserver agreement for the dependent variable.
- Step by step procedural instructions (including calculations) for determining procedural fidelity (or treatment integrity) for the independent variable.

Drafts will be cumulative in nature, will incorporate editorial feedback provided by the instructor, and will be worth 2 points per draft. During the last week of the course, the group will assemble all of the drafts (and make all recommended editorial changes) into one single Experimental Analysis of Behavior project, and one single Applied Behavior Analysis project, and will submit these as assigned. Each of these two projects will be worth up to 30 points.

Performance-based Common Assignments

Research Worksheets. As a precursor to the EDRE projects, your group will complete two research worksheets – one for an article from the Experimental Analysis of Behavior literature, and from the Applied Behavior Analysis literature. Your group will be assigned the articles that will serve as the basis of your EDRE projects, thereby providing sound bases on which to develop the replication and extension studies required for those projects. Each research worksheet is worth up to 10 points.

Problem Sets. You will complete these per instructions contained on each problem set. A total of 10 points is possible for each correctly completed Problem Set. ***Incorrect responses may be corrected and resubmitted once, for up to ½ credit for each corrected response.*** Corrected problem sets will be accepted up to the time of the final examination; none will be accepted afterward. Due dates are indicated in the class schedule.

Quizzes. You will complete quizzes as specified in the course calendar, below. Each quiz question is worth 1 possible point. Quizzes may be taken twice, with the higher quiz score counting toward your grade. On each attempt, however, you may not return to a quiz question once it has been answered. Quizzes will be timed, with the amount of time permitted for the quiz equal to 1.5 minutes multiplied by the number of quiz questions. There will be 75 quiz questions, in total, across the course.

CITI Module: 10 points

The CITI Program is an on-line training program on the principles, regulations, and rules governing the practice of research. Students will complete the Basic CITI Responsible Conduct of Research Module recommended for anyone conducting research at GMU.

These modules are available through

<https://about.citiprogram.org/en/course/responsible-conduct-of-research-basic/>. When you have completed the basic course modules, you will receive a Completion Report.

Upload the certificate of completion in the assignment link.

Other Requirements

Attendance/Participation: All are expected to communicate promptly and respectfully with assigned groupmates. One additional point will be granted for each draft, research worksheet, and Make Your Own Experiment project for each group member, when that assignment has been submitted on time, with participation of each group member. (As indicated in assignment instructions on Blackboard, group members participating in an assignment will list their names and co-participating groupmate names atop the first page of the submission. Only group members whose names are listed will receive the participation point for a submission.

Module Assignments

All module assignments must be concluded with work submitted by Thursdays at 11:59 p.m. ET. Please plan accordingly. Best practices will have you open the module on Friday mornings or afternoons to review the content and check the assignments. Then, pace and participate accordingly for the rest of the week.

Late Work

Work is considered on time if it is submitted by 11:59 p.m. (ET) on the date that it is due. Late work will only be accepted when prior arrangement has been made with the instructor.

Grading

Traditional rounding principles apply.

93-100% = A
80 – 82% = B-

90-92% = A-
70 – 79% = C

87-89% = B+
<70% = F

83-86% = B

Assignment Type	Number of Instances	Points per Instance	Total Assignment Type	Cumulative Points
Final Exam	1 exam	50 points	50 points	50 points
EDRE Projects	2 projects	30 points	60 points	110 points
EDRE Project Drafts	6 drafts	2 points	12 points	122 points
Participation – EDRE Projects	2 projects	1 point	2 points	124 points
Participation – EDRE Project Drafts	6 drafts	2 point	12 points	136 points
Research Worksheets	2 wksheets	10 points	20 points	156 points
Research Worksheet Participation	2 wksheets	2 points	4 points	160 points
Problem Sets	4 sets	10 pts (3) 20 pts (1)	50 points	210 points
Quiz Questions	112 questions	1 point	117 points	327 points
CITI Module	1 module	10 points	10 points	337 points

A = 313 – 337 points	A- = 303 - 312 points	B+ = 293 - 302 points	B = 279 – 292 points	B- = 269 - 278 points	C = 235 - 268 points	F < 235 points
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***Note:** The George Mason University Honor Code will be strictly enforced. See [Academic Integrity Site \(https://oai.gmu.edu/\)](https://oai.gmu.edu/) and [Honor Code and System \(https://catalog.gmu.edu/policies/honor-code-system/\)](https://catalog.gmu.edu/policies/honor-code-system/). Students are responsible for reading and understanding the Code. “To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set forth this honor code: Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.” Work submitted must be your own new, original work for this course or with proper citations

Student Evaluations of Teaching:

The student evaluation of teaching, or SET, is an online course survey. You are strongly encouraged to complete this form for each course as this feedback helps instructors and

administrators improve your class experiences. Towards the end of the course, you will receive email and Blackboard notifications when the evaluations open. Your anonymous and confidential feedback is only shared with instructors after final grades have been submitted.

Professional Dispositions

Students are expected to exhibit professional behaviors and dispositions at all times. See [Policies and Procedures \(https://cehd.gmu.edu/students/policies-procedures/\)](https://cehd.gmu.edu/students/policies-procedures/).

Class Schedule

Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.

ABA = Applied Behavior Analysis (Cooper, Heron, Heward)

Date	Topics	Assignments / Deliverables
Module 1	Review Syllabus Introduction to observation, measurement, & single-subject design Group Assignments Dependent and Independent Variables Reading behavior analytic research Measurement – Why bother? Defining dependent variables Social Validity	<ul style="list-style-type: none"> • Syllabus • <u>ABA</u> pp. 3-7, 16-17, 59-70, 73-80 • Dermer & Hoch (1999) • Quiz questions • Research Worksheet 1
Module 2	Direct Measures of Behavior: count, cumulative count, duration, rate, latency, interresponse time, extensity, intensity Reliability and interobserver agreement for direct measures of behavior Continuous and discontinuous measurement	<ul style="list-style-type: none"> • <u>ABA</u> pp. 103-105, 110 - 12 • Quiz questions • Research Worksheet 2 • Problem Set 1 • EDRE Draft1
Module 3	Indirect Measures of Behavior: accuracy, intensity, trials to criterion, percentage, percentage occurrence, percentage intervals occurrence, permanent products, and other estimates Reliability and interobserver agreement for indirect measures of behavior Continuous and discontinuous measurement Selecting appropriate measures	<ul style="list-style-type: none"> • <u>ABA</u> pp. 80-100, review 110-121 • Quiz questions • Problem Set 2 • EDRE Draft 2

Date	Topics	Assignments / Deliverables
	General data collection issues	
Module 4	Visual interpretation of time series analysis data How to graph How to read a graph	<ul style="list-style-type: none"> • ABA pp. 124-154 • Quiz questions • EDRE Drafts 3 • Problem Set 3
Module 5	Single subject (Time Series Analysis) Designs Withdrawal Designs (AB, ABA, ABAB, BAB, etc.); Alternating Treatments Design Pairwise Comparison Design Treats to internal validity with these designs	<ul style="list-style-type: none"> • ABA Ch. 7 and 8 • Quiz questions • EDRE Draft 4
Module 6	Multiple Baseline Designs Changing Criterion Design Simultaneous Treatments Design Threats to internal validity	<ul style="list-style-type: none"> • ABA Ch. 9 • Quiz Questions • EDRE Draft 5 • Problem Set 4
Module 7 & 8	Combining measurement and design elements to solve complex problems Measuring choice, preference, and psychiatric symptoms Behavior Analytic Literature Research Ethics General Issues in Measurement and Experimental Design – Review of Designs, Functional Control, and Internal Validity	<ul style="list-style-type: none"> • ABA Ch. 10 • EDRE Draft 6 • CITI Training Certificate
	Final Exam – must complete online (Blackboard) no later than 11:59 pm US Eastern Time Submit EDRE Projects	<ul style="list-style-type: none"> • Final exam (complete and submit by 11:59 on • Submit EDRE Projects by 11:59 pm on • Submit any corrected problem sets by 11:59 pm

Core Values Commitment

The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles: See [Core Values](http://cehd.gmu.edu/values/) (<http://cehd.gmu.edu/values/>).

GMU Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the Mason Honor Code. See [Honor Code and System](https://catalog.gmu.edu/policies/honor-code-system/) (<https://catalog.gmu.edu/policies/honor-code-system/>).
- Students must follow the university policy for Responsible Use of Computing. See [Responsible Use of Computing](http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/) (<http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>).
- Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students **solely** through their Mason email account.
- Students with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor. See [Disability Services](https://ds.gmu.edu/) (<https://ds.gmu.edu/>).
- Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to either Tk20 or VIA should be directed to [Assessment support](https://cehd.gmu.edu/aero/assessments/) (<https://cehd.gmu.edu/aero/assessments/>).
- Questions or concerns regarding use of Blackboard should be directed to [Blackboard Instructional Technology Support for Students](https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/) (<https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/>).

Notice of mandatory reporting of sexual assault, sexual harassment, interpersonal violence, and stalking:

As a faculty member, I am designated as a “Non-Confidential Employee,” and must report all disclosures of sexual assault, sexual harassment, interpersonal violence, and stalking to Mason’s Title IX Coordinator per [University Policy 1202](#). If you wish to speak with someone confidentially, please contact one of Mason’s confidential resources, such as the [Student Support and Advocacy Center \(SSAC\)](#) at 703-380-1434 or [Counseling and](#)

[Psychological Services \(CAPS\)](#) at 703-993-2380. You may also seek assistance or support measures from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

- For information on student support resources on campus, see [Student Support Resources on Campus](#) (<https://ctfe.gmu.edu/teaching/student-support-resources-on-campus>).
- For additional information on the College of Education and Human Development, please visit our website [College of Education and Human Development](#) (<http://cehd.gmu.edu/>).

Appendix

The final exam is the signature assessment for this course. Scores on the exam will be used for program evaluation instead of a rubric.