

Identification	Subject	Psychophysiology, PSYC 290, 3 KU (6 AKTS)
	Department	Psychology
	Program (Undergraduate, Graduate)	Undergraduate
	Term	Fall Semester 2026
	Instructor	Elxan Yusifov
	Email:	Elkhan.yusifov@khazar.org
	Classroom/hours	
Prerequisites	-	
Language	English	
Compulsory/Elective	Elective	
Textbooks and course materials	Primary Reading 1. Andreassi, J. L. (2007). Psychophysiology: Human behavior and physiological response (5th ed.). Psychology Press. 2. Stern, R. M., Ray, W. J., & Quigley, K. S. (2001). Psychophysiological recording (2nd ed.). Oxford University Press. 3. Cacioppo, J. T., Tassinary, L. G., & Berntson, G. G. (Eds.). (2016). Handbook of psychophysiology (4th ed.). Cambridge University Press. 4. Kalat, J. W. (2024). Biological psychology (14th ed.). Cengage. 5. Sapolsky, R. M. (2004). Why zebras don't get ulcers (3rd ed.). Henry Holt and Company. Additional Course Materials Lecture slides; the Reading Pack (journal articles supplied by the instructor); the Course Lab Workbook (Exercises 1-8); open software and demonstrations (BIOPAC/OpenBCI, Kubios HRV, PsychoPy); and sample affective stimulus sets.	
Course description	Psychophysiology examines the relationship between psychological processes and physiological activity. The course focuses on how attention, emotion, motivation, cognition, stress, social interaction, individual differences, and clinical states are reflected in measurable bodily responses. It introduces the biological foundations of psychophysiological signals, core recording principles, and the logic and limitations of inferring psychological states from physiological data. Across the semester, major methods including EEG and ERP, electrodermal activity, ECG and HRV, EMG and startle, pupillometry, cortisol, and related measures are considered in relation to attention, sleep and consciousness, emotion, stress, motivation, social processes, development, personality, and clinical disorders. The course also covers research design, baseline and control conditions, artefacts, data interpretation, laboratory safety, participant rights, biofeedback and neurofeedback, deception detection, and other applied uses of psychophysiology. Laboratory demonstrations and selected data exercises connect theoretical questions with observable physiological responses and illustrate both the value and the limits of psychophysiological evidence.	

Course objectives	1. Establish the conceptual, historical, and biological foundations of psychophysiology within psychological science. 2. Introduce the principles of psychophysiological recording and the logic of drawing psychological inferences from physiological signals. 3. Examine major theoretical and empirical findings on attention, sleep, emotion, motivation, stress, social interaction, development, and individual differences. 4. Relate common psychophysiological measures, including EEG/ERP, EDA, ECG/HRV, EMG/startle, pupillometry, and cortisol, to appropriate psychological research questions. 5. Develop a critical approach to the interpretation of physiological data, including baseline selection, artefacts, response patterns, and alternative explanations. 6. Examine clinical, social, forensic, and other applied uses of psychophysiology, with attention to the strength and limitations of the supporting evidence. 7. Integrate laboratory safety, informed consent, confidentiality, and participant rights into the study of psychophysiological methods.		
Learning Outcomes	On successful completion of the course, students will be able to: 1. Distinguish psychophysiology from related fields and identify valid and overextended psychophysiological inferences in short examples. 2. Match a psychological construct to an appropriate physiological measure and justify the choice while stating important limitations. 3. Design a simple psychophysiological study by specifying a research question, physiological measure, baseline or control condition, likely artefacts, and relevant ethical safeguards. 4. Process and interpret data from laboratory demonstrations by calculating or extracting appropriate indices and relating them to the psychological question under study. 5. Compare theoretical accounts and empirical findings concerning attention, emotion, motivation, stress, sleep, and consciousness. 6. Interpret physiological reactivity in social, developmental, personality, and clinical contexts while considering individual differences and alternative explanations. 7. Critically evaluate claims concerning biofeedback, neurofeedback, deception detection, and other applied psychophysiological methods. 8. Apply informed-consent, confidentiality, participant-rights, and laboratory-safety principles in a simulated or classroom-based recording procedure. 9. Communicate psychophysiological findings in an APA-style written report and an oral presentation.		
Teaching methods	Case analysis		+
	Group discussion		+
	Lecture		+
	Simulation		+
Evaluation Criteria	Methods	Date/deadlines	Percentage (%)
	Midterm Exam		25
	Presentations	Weeks 4, 7, 10, 13	20
	Practical Assignments		10
	Activity	Throughout: discussion, article critique, project presentation	10
	Attendance		5
	Final Exam	End of semester	30
	Total		100

Class Policy	Midterm Exam – 25 points The midterm examination covers the material studied during the first half of the semester. Students are expected to demonstrate accurate understanding of core psychophysiological concepts, physiological measures, research principles, and the relationship between psychological processes and bodily responses. Questions may require students to distinguish between concepts, interpret short research scenarios, select an appropriate physiological measure, or explain limitations in psychophysiological inference. Responses are evaluated according to accuracy, relevance, and quality of reasoning. Presentations – 20 points Four presentations will be conducted during the semester, with each presentation worth 5 points. For each presentation, students will be assigned or will select a topic related to the course content. They are expected to research the topic using appropriate academic sources, explain the main concepts clearly, and connect the presented material to relevant psychophysiological theories, methods, or research findings. Presentations should demonstrate accurate understanding of the topic, logical organization, appropriate use of scientific evidence, and the student's ability to explain the material in their own words. Depending on the topic, students may also be asked to interpret research findings, physiological measures, laboratory examples, or applied cases. Higher grades are awarded when the presentation is well-prepared, scientifically accurate, clearly structured, supported by reliable academic sources, and demonstrates genuine understanding of the topic. Presentations that rely mainly on reading from slides, contain weak or unsupported information, or show limited understanding of the material receive a lower grade. Students are expected to answer questions related to their presentation and demonstrate that they understand the information and sources they have used. Practical Assignments / Presentations – 10 points Students will complete a series of practical presentation-based assignments during the semester. Depending on the course schedule and the complexity of the topics, students may complete two or three presentations rather than a single presentation. Assignments may involve interpreting psychophysiological data, presenting a selected research article, explaining the use of a physiological measure, discussing findings from a laboratory demonstration, or critically examining an applied psychophysiological claim. The total value of all presentations together is 10 points. The instructor will inform students in advance how the 10 points will be distributed across the assigned presentations. Higher performance is demonstrated when the student accurately explains the psychological question, uses appropriate scientific evidence, interprets physiological information correctly, acknowledges methodological limitations, and communicates the material clearly. Presentations that remain descriptive, rely heavily on slides,
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contain unsupported claims, or show weak understanding of the presented findings receive a lower evaluation. Activity – 10 points Activity is evaluated throughout the semester and reflects the student’s academic engagement with the course rather than physical attendance alone. Students are expected to participate in discussions, respond to questions, critically examine assigned articles, contribute to laboratory or simulation activities, interpret examples presented during class, and take part in project-related discussions. Students who regularly connect their contributions to psychophysiological concepts, question interpretations, suggest alternative explanations, and engage thoughtfully with research evidence receive a higher activity grade. Passive attendance or occasional participation without meaningful engagement does not qualify for the full activity score. Attendance – 5 points Attendance is recorded separately from Activity. Students are expected to attend classes regularly and arrive on time. Absences affect the attendance grade according to the university attendance record. Students who miss more than 25% of the total course hours may become ineligible to take the examination in accordance with university regulations. Students arriving more than 10 minutes late may enter quietly, but the lateness will be recorded. Academic Integrity and Use of AI AI tools may be used outside quizzes and examinations for purposes such as brainstorming research questions, organising presentation structure, improving language, troubleshooting code, or identifying keywords for literature searches.		
Tentative Schedule		
Week	Topics	Textbook/Assignments
1	Introduction to psychophysiology: the mind-body problem, history of the field, psychophysiology versus physiological psychology, and the logic of psychophysiological inference (one-to-one, one-to-many, many-to-one, and many-to-many relations).	Andreassi: introductory chapter (historical perspective) Stern et al.: Part I, Chapter 1, “Psychophysiology” Handbook of Psychophysiology: section on psychophysiological inference
2	Biological foundations for psychologists: neuronal and muscular activity as sources of psychophysiological signals; central and peripheral nervous systems; autonomic nervous system; sympathetic-parasympathetic regulation; homeostasis, allostasis, and arousal.	Stern et al.: Chapter 2, “Neurons and Muscles: The Sources of Psychophysiological Recordings” Andreassi: chapter on physiological foundations Kalat, Biological Psychology: section on the autonomic nervous system

3	From body to measure: recording principles, electrodes, amplifiers, filters, digitisation, artefacts and their impact on interpretation, laboratory safety, informed consent, and participant rights.	Stern et al.: Chapter 3, “Equipment Used in Psychophysiological Recording”; Chapter 4, “Psychophysiological Recordings”; Chapter 6, “Safety and Ethics in a Psychophysiology Laboratory”
4	Designing and interpreting psychophysiological research: baseline selection and the law of initial values; individual response stereotypy; response fractionation; critique of general arousal theories; common errors in inferring psychological states from physiological measures.	Stern et al.: Chapter 5, “Some Basic Principles of Psychophysiology” Reading Pack: theoretical article on psychophysiological inference
5	Attention and orienting: orienting and defence responses, habituation, skin conductance response (SCR), cardiac deceleration, Lacey's intake-rejection hypothesis, selective attention, and vigilance.	Andreassi: “Electrodermal Activity (EDA) and Behavior”; “Heart Activity and Behavior I: Developmental Factors, Motor and Mental Activities, Perception, Attention, and Orienting Responses”
6	Brain rhythms, sleep, and states of consciousness: EEG and psychological interpretation, alpha activity and cortical activation, drowsiness, vigilance decrement, sleep stages, REM sleep, sleep deprivation, meditation, and hypnosis.	Stern et al.: Chapter 7, “Brain: Electroencephalography and Imaging” Andreassi: EEG and behaviour chapters (sleep and arousal sections) Course Lab Workbook, Exercise 3: alpha blocking, eyes-open versus eyes-closed comparison
7	Electrophysiological traces of cognition: event-related potentials as psychological measures; P300 and resource allocation; N400 and semantic processing; ERN and error monitoring; mental workload; contributions and limitations of fMRI, MEG, and fNIRS	Andreassi: chapter on evoked and event-related potentials; “Neuroimaging, Neuromagnetism, and Behavior” Stern et al.: Chapter 7 (ERP and imaging sections) Reading Pack: classic articles on P300 and N400
8	Midterm Exam	Coverage: Weeks 1-7 readings, lecture materials, laboratory concepts, and assigned sections from Andreassi, Stern et al., Handbook of Psychophysiology, Kalat, and the Reading Pack.
9	Emotion I: dimensional models of emotion (valence and arousal), facial EMG and emotional expression, affective modulation of the startle reflex, physiological responses to affective pictures, and the debate on autonomic specificity of emotion.	Andreassi: “Muscle Activity and Behavior” (facial EMG and startle sections) Stern et al.: Chapter 8, “Muscles: Electromyography” Handbook of Psychophysiology: emotion and motivation section
10	Emotion II: fear, anxiety and fear conditioning, emotion regulation and its physiological signature, heart rate variability (HRV) as an index of emotional flexibility, and vagal tone theories.	Andreassi: “Heart Activity and Behavior II: Stress, Emotions, Motivation, Personality, Social Factors, Brain Interactions, and Conditioning” Handbook of Psychophysiology: HRV and vagal tone section
11	Stress and health psychophysiology: physiological stress responses, cardiovascular reactivity, cortisol and the HPA axis, allostatic load, health consequences of chronic stress, psychoneuroimmunology, and the buffering role of social support.	Andreassi: “Blood Pressure, Blood Volume, and Behavior”; “Applied Psychophysiology III: Biofeedback and Psychoneuroimmunology” Sapolsky, Why Zebras Don't Get Ulcers: selected chapters Handbook of Psychophysiology: stress and health section

12	Motivation, effort, and self-regulation: pupil diameter as an index of mental effort, cardiac measures and effort mobilisation, the challenge-threat model, reward sensitivity, and approach-avoidance motivation.	Andreassi: "Pupillary Response and Behavior"; "Eye Movements, Eye Blinks, and Behavior" Stern et al.: Chapter 9, "Eyes: Pupillography and Electrooculography"
13	Social psychophysiology and personality: physiological linkage in interaction, empathy and emotional contagion, intergroup attitudes and implicit evaluation, physiological correlates of extraversion, BIS/BAS, sensation seeking, and impulsivity.	Andreassi: "Heart Activity and Behavior II" (personality and social factors sections) Handbook of Psychophysiology: social psychophysiology section Reading Pack: empirical article in social psychophysiology
14	Development and individual differences: infant heart rate and vagal tone, temperament and reactivity, behavioural inhibition, physiological indices of attention in childhood, changes with ageing, and sex and cultural differences.	Andreassi: "Heart Activity and Behavior I" (developmental factors section)
15	Clinical psychophysiology: anxiety disorders and panic, startle and reactivity in PTSD, depression, schizophrenia, ADHD, psychopathy, and the evidence base for biofeedback and neurofeedback. Applied and forensic psychophysiology and course review: detection of deception and scientific critique of the polygraph; workload, vigilance, ergonomics, environmental psychophysiology; limitations and future directions including ambulatory and wearable measurement; student project presentations.	Andreassi: "Applied Psychophysiology II: Auditory and Visual System Tests, Nervous System Disorders, Clinical Neurology, and Behavior Disorders"; "Applied Psychophysiology III: Biofeedback and Psychoneuroimmunology" Andreassi: "Applied Psychophysiology I: Detection of Deception, Vigilance, Job Design, and Workload"; "Environmental Psychophysiology"
16	Final Exam	