

# COURSE DESCRIPTIONS

## Clinical Psychology (CPSY)

### CPSY 5101 Psychotherapy: Theories and Research (3 SCH)

A survey of the major affective, cognitive, and behavioral theories and techniques in individual and family psychotherapy, including their historical development, key concepts, therapeutic process, and practical applications.

### CPSY 5102 Developmental Psychology & Developmental Disabilities (3 SCH)

Study of developmental theories and the developmental process throughout the lifespan. Focus on physical, cognitive, social, and emotional components of development, as well as on developmental disabilities.

### CPSY 5103 Learning and Cognition (3 SCH)

A survey of contemporary theories of learning and their applications to human problems. Includes a review of social and cognitive theories of learning and behavior analysis and modification.

### CPSY 5104 Psychopathology (3 SCH)

An introduction to a variety of psychological disorders and the theories about underlying etiologies of these disorders with an applied emphasis on the diagnostic procedures of the current Diagnostic and Statistical Manual. Includes an overview of psychopharmacological interventions.

### CPSY 5201 Psychotherapy Skills and Techniques (3 SCH)

Review and training in the basic methods, skills, and techniques of individual psychotherapy for treatment intervention with a focus on the practice of these techniques through role playing and modeling. Focus on use of evidence-based practices in various treatment settings.

### CPSY 5202 Applied Ethics (3 SCH)

Review of ethical codes, professional standards, and laws regulating the practice of psychology and counseling, and application of ethical decision-making models to case studies and professional practices.

### CPSY 5253 Research Design and Methodology (3 SCH)

Overview of the primary psychological research methodologies and utilization of research methods to evaluate individual and program level treatment effects.

### CPSY 5309 Professional Issues and Consultation (3 SCH)

Addresses issues in professional practice, including career planning, licensing, records management, Texas law, ethics and professional consultation, and standards and responsibilities.

### CPSY 5401 Statistics (3 SCH)

Fundamentals of analysis of variance and nonparametric statistics, problems of psychological measurement and research design, and an introduction to multivariate design and analysis.

### CPSY 5454 Research Thesis I (3 SCH)

The goal is for students to complete a thesis proposal, submit it to the graduate committee, and obtain committee approval to pursue the thesis research.

### CPSY 5501 Addictions: Research and Practice (3 SCH)

Review of physiological, emotional, social, and physical aspects related to a broad range of addictions, including, but not limited to, gambling, sex,

alcohol, or drugs, treatment interventions, legal and ethical issues, and prevention.

### CPSY 5502 Lifestyle and Career Development (3 SCH)

Review of theories of career choice and lifestyle development, theories and methods of career assessment, and techniques to facilitate career development across the lifespan.

### CPSY 5503 Group Psychotherapy (3 SCH)

Overview of the history, principles, theories, and dynamics of group psychotherapy. Students participate in a small group experience as an ungraded requirement for successful course completion.

### CPSY 5550 Research Thesis II (3 SCH)

Students work toward completion of a graduate committee-approved thesis research project.

### CPSY 5701 Cognitive-Behavioral Therapy (3 SCH)

This course provides students with a foundation in cognitive-behavioral theory and its associated therapeutic techniques. Theoretical underpinnings and implementation of empirically supported culturally responsive behavioral and cognitive interventions for a range of adult psychopathology will be discussed. [cross-listed]

### CPSY 5802 Advanced Cognitive-Behavioral Therapy (3 SCH)

This course will address cognitive-behavioral case formulation, practical aspects of key cognitive-behavioral techniques across disorders, and flexible application of cognitive behavioral therapy to complex and/or unique problems in various contexts and settings. The synthesis of theory, skills, and experience will be emphasized. Prerequisite: Cognitive-Behavioral Therapy [cross-listed]

### CPSY 5901 Intellectual Assessment (3 SCH)

Review of theory underlying intelligence tests. Supervised practice in the administration, scoring, and interpretation of intellectual tests, specifically the Wechsler Scales and Woodcock-Johnson.

### CPSY 5902 Personality Assessment (3 SCH)

Review of theory and practice in the use of personality assessment procedures, including interview, objective and projective techniques. There will also be coverage of test interpretation and report writing.

### CPSY 5903 Clinical Mental Health Assessment (3 SCH)

Overview of mental health assessment history and test psychometrics necessary to apply clinical instruments competently. Focus on various methods of clinical mental health assessment including: structured and unstructured interviews, brief mental status assessment, focused or narrow-band measures of specific forms of psychopathology, and broadband surveys covering multiple forms of psychopathology. There will also be coverage of test interpretation and report writing.

### CPSY 5904 Neuropsychological Assessment (3 SCH)

Overview of the practice of neuropsychological assessment and basic concepts related to classes of cognitive functions. Focus on psychometric principles germane to neuropsychological assessment as well as test selection, administration, scoring, data interpretation, and report writing.

### CPSY 5905 Social, Cultural, and Systemic Bases of Behavior (3 SCH)

Examination of research and evidence-based culturally sensitive clinical practices with individuals and families from varying socioeconomic groups and differing cultural backgrounds. Focuses on group processes, attributions, discrimination, and attitudes that can impact treatment.

### CPSY 5906 Gender and Cultural Factors in Clinical Practice (3 SCH)

A broad overview of gender influencing stereotypes, power, and privilege and the role of culture on such influence. Other topics may include gendered bodies, intimate relationships, workplace and power relations, manhood and masculinity, and gendered violence. The impact on therapy and treatment approaches for clients of diverse backgrounds will be examined.

#### **CPSY 5907 Clinical Neuropsychology (3 SCH)**

Introduction to historical background of brain-behavior relationships. Focus upon brain pathologies and underlying brain structures: aphasia, alexia, agraphia, body schema disturbances, apraxia, agnosia, neglect syndromes, late and early onset dementias, frontal lobe syndrome, seizure disorders, traumatic brain injury and related brain syndromes.

#### **CPSY 5908 Trauma Focused Approaches to Intervention (3 SCH)**

This course addresses the history, etiology, symptoms, diagnosis, and treatment of trauma-related diagnoses, including post-traumatic stress disorder (PTSD), acute stress disorder (ASD), and common comorbid conditions. Students will be exposed to specialized assessments for identifying trauma-related symptoms and the major research-supported treatment approaches, including cognitive processing therapy (CPT), eye-movement desensitization and reprocessing (EMDR), Imagery Rehearsal Therapy (IRT), stress management techniques, group and family therapy approaches, and psychopharmacological interventions. [cross-listed]

#### **CPSY 6101 Clinical Practicum (3 SCH)**

Clinical experience in on-site training clinic supervised by program faculty.

#### **CPSY 6401 Advanced Clinical Practicum I (3 SCH)**

Supervised clinical experience in an approved setting that provides psychological services. On-site supervision required. Students must accumulate at least 300 clock hours of supervised experiences over two semesters with a minimum of 100 of these hours spent in direct client contact.

#### **CPSY 6402 Advanced Clinical Practicum II (3 SCH)**

Supervised clinical experience in an approved setting that provides psychological services. On-site supervision required. Students must accumulate at least 300 clock hours of supervised experiences over two semesters with a minimum of 100 of these hours spent in direct client contact.

## **Clinical Social Work (MSW)**

#### **MSW 5101 Generalist Practice I: Generalist Practice with Individuals (3 SCH)**

This course focuses on developing and refining micro-level social work skills with a specific emphasis on working with individuals. Students will engage in an in-depth examination of the intervention process, including assessment, treatment planning, and implementation. Building on a foundation of evidence-based approaches, including solution-focused, cognitive-behavioral, and task-centered techniques, students will learn to apply these methods to diverse client populations in family and environmental contexts. The course also emphasizes the development of advanced intervention skills related to generalist practice with individuals, families, groups, organizations, and communities in multiple service, community-based agencies. Through experiential learning and case studies, students will gain the necessary competencies to work effectively with clients across diverse settings.

#### **MSW 5102 Policy I: Social Welfare Policy and Services (3 SCH)**

This course offers a comprehensive overview of the evolution of social welfare and professional social work, from its historical developments

to contemporary practice. Drawing on a range of interdisciplinary perspectives, students will explore the complex interplay between social policy, research, and practice, with a focus on policies affecting diverse populations, including rural communities, women, and people experiencing marginalization. Through rigorous analysis of social problems and policy responses, students will gain a deep understanding of the impact of social policy on vulnerable and marginalized groups and the importance of social work advocacy. The course will engage students in critical reflection and ethical decision-making.

#### **MSW 5103 Human Behavior and the Social Environment (3 SCH)**

This course provides an in-depth exploration of the dynamics of human behavior and its relationship with society, families, and groups from a wide range of perspectives, including biological, psychological, systems, and social/environmental. Through the lens of a strengths-based and life course approach, students will gain a comprehensive understanding of developmental theories and practice knowledge that spans the entire life span, from birth to end of life. Special attention will be paid to the impact of social systems on the growth of individuals in diverse populations. Drawing on an array of theoretical frameworks, students will engage in critical analysis and discussion of the complex interplay between individual development and larger social factors, including location, culture, race, gender, sexual orientation, and class.

#### **MSW 5201 Generalist Practice II: Generalist Practice with Families, Groups, Organizations and Communities (3 SCH)**

This advanced course builds on foundational knowledge and practice skills in generalist social work to provide students with a deeper understanding of systems and advanced generalist practice theories within the context of rural, integrated, and multiple-service social service delivery systems. Through a focus on mezzo and macro community practice, students will integrate theory, skills, and techniques to intervene with families, groups, organizations, and communities to advance social, economic, and environmental justice. The course emphasizes the importance of utilizing evidence and strengths-based approaches and participatory models to empower communities. Through case studies and exercises, students will develop advanced practice skills and an understanding of how theory guides practice with diverse populations.

#### **MSW 5202 Diversity and Multicultural Practice (3 SCH)**

This course provides a comprehensive exploration of the complexities involved in identifying and delivering social services to individuals from diverse locational and cultural backgrounds. Drawing from theoretical frameworks, students will gain a nuanced understanding of the impacts of power, privilege, oppression, and stigma on diverse populations. Through case studies and critical analysis, students will develop the knowledge and skills to work effectively with diverse populations, while promoting human and civil rights. The course will also foster self-awareness to increase cultural sensitivity and inclusive ethical practice.

#### **MSW 5250 Social Work Research (3 SCH)**

This advanced research methods course is designed to equip students with the knowledge and skills needed to conduct rigorous research in a variety of settings. Drawing from quantitative, qualitative, and mixed methods designs, students will gain an understanding of the scientific inquiry process and how it applies to social work practice and policy. Through critical analysis of existing research, students will explore the community, cultural and ethical considerations that are essential when working with underserved and special populations. The course emphasizes the application of basic concepts of research methodology in social work including question formulation, research design, sampling, measurement, data analysis, dissemination, and community engagement. Students will learn about the foundation and quality criteria of evidence-

based practices. Upon completion of this course, students will be prepared to assess relative evidence for practice decisions through critical analysis of literature and conduct their own individualized research projects based on practice intervention with clients or systems in their practicum setting.

**MSW 5301 Advanced Practice I: Mental Health and Health Care Practice (3 SCH)**

This is the first of a two-part sequence focused on advanced social work practice skills. Through examination of the theoretical basis of mental health treatment, this course will examine a wide range of community and medical-based services for people with mental health concerns and illness. Evidence-based approaches to practice with diverse populations will be a focus of this course.

**MSW 5302 Policy Analysis and Practice II: Health Policy for Social Work (3 SCH)**

Students will build upon their policy practice skills and macro-level community practice techniques, exploring frameworks for health and mental health policy research and analysis. This course provides an advanced examination of the complex and dynamic interplay between policy, practice, and research within the context of rural health and mental health programs. Through a systematic and critical analysis of federal, state, and local policies, students will develop a nuanced understanding of how social welfare policies impact diverse populations and the delivery of services in both urban and rural communities. Advanced analysis and critique of social welfare policies will be undertaken, with a particular focus on those affecting families and oppressed populations. The course will also provide students with advocacy and intervention techniques designed to positively impact social welfare and public policies, emphasizing the development of legislative research and effective written and verbal persuasion skills.

**MSW 5303 Foundations of Psychopathology Assessment and Interdisciplinary Mental Health Practice (3 SCH)**

This course presents an introduction to the study of psychopathology and its impact on individual functioning and family dynamics. Students will develop foundational knowledge of the theoretical underpinnings and basic structure of the DSM-5 and explore interdisciplinary clinical practice models in mental health. Through critical analysis and discussion, students will examine the social, cultural, and economic factors that shape the experience and treatment of mental health conditions.

**MSW 5401 Advanced Practice II: Mental Health Interventions (3 SCH)**

Refining and building upon prior coursework, this advanced course provides students with an in-depth exploration of health and mental health service delivery systems, and the application of advanced practice skills within this context. Evidence-based modalities to address mental health care needs of diverse populations will be a focus of this course. Through the use of case studies and exercises, students will develop a nuanced understanding of how to effectively engage with and provide evidence-informed interventions for diverse populations. The course will also cover key practice models and treatment modalities, providing students with a comprehensive and practical skillset. Through experiential learning opportunities, such as participation in case simulations and other exercises, students will develop and refine their ability to deliver advanced social work interventions in real-world settings.

**MSW 5402 Program Evaluation (3 SCH)**

This advanced course builds upon students' foundational knowledge of research methodology and provides a comprehensive overview of evaluation methods used to assess social work practice and program effectiveness. Through the use of case studies and real-world

scenarios, students will learn how to conduct needs assessments, and evaluate program outcomes using both quantitative and qualitative analysis techniques. Students will also learn how to use single-system methodology to study practice intervention with clients or systems in diverse implementation settings and geographic areas. Emphasis will be placed on the implementation and maintenance of evidence-based practices and the use of logic models in program design and evaluation, with a focus on applications in the area of concentration and the practicum experience. By the end of the course, students will have gained valuable skills in program evaluation and be prepared to apply them in real-world settings.

**MSW 5901 End-of-Life Care and Bereavement Support (3 SCH)**

This course provides a comprehensive exploration of the complex issues surrounding death, dying, and bereavement. Students will develop knowledge and skills related to providing effective social work practice in end-of-life contexts, including the delivery of supportive services for individuals and families experiencing loss. The course will integrate theory, research, and practice in relation to the grief process, with an emphasis on the ethical and legal considerations relevant to the practice context. Students will examine the societal and cultural factors that impact end-of-life care, including issues of diversity and social justice. Through critical analysis and discussion, students will explore the challenges and opportunities associated with end-of-life practice, and develop the competencies required to provide effective support for individuals and families experiencing loss.

**MSW 5902 Leadership and Strategic Management in Health Services (3 SCH)**

This course is designed for students who wish to gain a comprehensive understanding of the principles and practices of administration and management leadership in human service settings. The course will examine the theoretical foundations of organizational behavior and management, as well as the knowledge and skills needed to effectively manage competing and limited resources. Students will learn about the key areas of agency management, including planning, supervision, policy development, board relations, budgeting, and fund raising. The course will also cover grant writing and other fundraising strategies used in the human services field. By the end of the course, students will have gained the skills and knowledge needed to effectively manage and lead human service organizations in a complex and ever-changing social, political, and economic environment.

**MSW 5903 Substance Misuse Treatment (3 SCH)**

This course offers a comprehensive exploration of social work practice with individuals struggling with substance misuse. Through a deep dive into central nervous system depressants, narcotics, stimulants, hallucinogens, marijuana, over-the-counter, and prescription drugs, students gain a foundational understanding of addiction and its biological, psychological, and sociological underpinnings. The course delves into DSM-5 diagnostic criteria for substance abuse/dependence, the social consequences of addiction, and treatment strategies for harm reduction. Special attention is given to the diverse needs of populations affected by substance abuse. The course is enriched through the involvement of practitioners from the community, providing students with the opportunity to engage in rich, evidence-based discussions.

**MSW 5904 Geriatric Mental Health: Theories, Research, and Practice (3 SCH)**

This course provides an in-depth analysis of the complex interplay between aging and mental health, with a focus on the unique challenges and opportunities that arise for older adults. Students will critically examine the nature and etiology of mental health problems in aging

populations, including mood disorders, anxiety disorders, cognitive disorders, and neurodegenerative diseases. Through a review of current research reports and cutting-edge theoretical perspectives, students will develop a comprehensive understanding of the biological, psychological, and sociological factors that contribute to mental health problems in later life. The course will also explore evidence-based interventions and best practices for promoting mental wellness and resilience among older adults. By the end of the course, students will possess the knowledge and skills needed to provide effective, culturally sensitive, and ethical social work practice with older adults.

#### **MSW 5905 Advanced Assessment and Intervention in Mental Illnesses (3 SCH)**

This course provides a comprehensive exploration of the theoretical frameworks, research methodologies, and clinical practices that inform the assessment and intervention of individuals diagnosed with serious mental illness. With an emphasis on evidence-based recovery-oriented practices, students will gain an in-depth understanding of the complexities of mental illness, including legal and ethical considerations, cultural sensitivity, and gender-appropriate interventions. Through a critical analysis of the social, cultural, and economic factors that shape the experience and treatment of mental illness, students will develop the skills and knowledge necessary to promote social justice and human rights in mental health practice.

#### **MSW 5906 Advanced Human Service Counseling: Theory, Models, and Techniques for Diverse Populations (3 SCH)**

This course provides a comprehensive exploration of theories, models, and techniques of counseling within the human service context. Emphasizing the application of modern counseling methods within multiple-service agencies, this course prepares students for social work practice with diverse individuals and groups across a range of settings including family services, foster care and adoption, corrections, substance abuse treatment centers, and more. Through experiential learning opportunities, students will develop advanced counseling skills, including the ability to conduct individual and group therapy sessions using evidence-informed approaches. Emphasis will be placed on the role of the counselor in promoting social justice and equity for diverse populations. Students will also gain knowledge and skills in the areas of ethical and legal considerations in counseling practice.

#### **MSW 6101 Seminar and Field Practicum I (4 SCH)**

The supervised field practicum will provide opportunities to apply advanced practice skills within a community agency or program, with a focus on promoting social justice and advancing social welfare. This seminar and field practicum builds upon the foundation, emphasizing the integration of classroom knowledge with field experience through a critical analysis of social work ethics, practice, policy, and the human behavior and social environment (HBSE) curriculum. Through facilitated discussions of complex field issues, students will deepen their understanding of social work ethics and the role of supervision in advancing professional competence. With a minimum of 240 clock hours spent in the agency, students gain valuable experience that prepares them for success in the field.

#### **MSW 6202 Seminar and Field Practicum II (4 SCH)**

This course offers an integrated approach to social work education, combining classroom theory with hands-on practical experience in a community agency or program. Through participation in a structured and supervised social work field practicum and concurrent seminar, students develop a deep understanding of the relationship between theory and practice and social work ethics. The course emphasizes the importance of evaluating practice, providing students with an opportunity to apply

their learning and demonstrate foundation social work skills in a real-world setting. With a minimum of 240 clock hours spent in the agency, students gain valuable experience that prepares them for success in the field. This course is restricted to admission to the M.S.W. Program.

#### **MSW 6301 Advanced Seminar and Field Practicum I (6 SCH)**

This course is a second-year seminar and practicum experience that builds upon the foundational knowledge and skills gained in the first year. The seminar is taken concurrently with Advanced Practicum I and is designed to enhance students' ability to integrate social work theory, research, and practice in real-world settings. Through reflective processing and critical analysis, students will deepen their understanding of the complex interactions between social systems, human behavior, and policy. The course will focus on advanced models of practice, including evidence-based interventions and community-based participatory research. Students will also further develop their skills in ethical decision-making, cultural competence, and effective use of supervision. The supervised practicum experience will provide students with opportunities to demonstrate advanced social work skills in diverse settings, including clinical and macro practice, and promote the application of their theoretical knowledge to real-world situations. Completion of at least 270 hours of field experience by end of the semester.

#### **MSW 6402 Advanced Seminar and Field Practicum II (6 SCH)**

This course provides students with a continuation of the concentration-specific practicum seminar, building upon the advanced field practicum and classroom learning experience. Through processing and discussion of field issues and situations, students will gain the knowledge and skills necessary to tackle advanced field social work topics. The supervised social work field practicum in an agency setting will provide students with opportunities to apply advanced year social work skills in a real-world setting. In addition, students will complete a capstone program paper, which will serve as a culminating project for their M.S.W. program. This paper will require students to integrate their knowledge and skills from all of their coursework and field experiences and demonstrate their ability to apply social work principles to a real-world issue or problem. Students will be required to complete a minimum of 290 clock hours in the agency, and assignments will be tailored to support practice in a community agency or program related to current coursework.

## **Cognitive and Behavioral Sciences (CABS)**

#### **CABS 5100 Journal Club (1 Credit)**

The Journal Club serves multiple practical purposes that allow students to learn about the principles of pedagogy and communication strategies, work to develop their own communication strategies through frequent presentations of recent high impact articles and receive feedback both from faculty and fellow students that will allow revision of these skills. The Journal Club will also be a forum for annual refreshers for ethics and a routine platform for discussions of controversial topics/scientific developments/recent publications. This will also be the forum for presentation of each student's own research/research update each year. Letter Graded

#### **CABS 5111 Responsible Conduct of Research (1 Credit)**

The applied ethics course will be structured to include didactics, faculty panel discussion, on-line training, and student example case presentations. The course will align with the National Institutes of Health training recommendations and their training program in ethics. Course topics will include Informed Consent, Rigor and Reproducibility, Research Misconduct, Peer Review, Authorship, Identification and Reporting of Conflict of Interest, Plagiarism, including topics in Artificial Intelligence, and Collaboration. Letter Graded



**CABS 5211 Research Tutorials (2 Credits)**

Students complete tutorial rotations under the supervision of two or more Cognitive and Behavioral Sciences faculty members by observing ongoing research. During the 10-week rotation, students will spend the equivalent of five afternoons per week in the laboratory (20 hours per week for 10 weeks, for a total of 200 hours). In consultation with their faculty advisors, students will select the research areas which best support their educational goals. [Repeat course once.] Letter Graded

**CABS 5301 Biological Statistics & Study Design I (3 Credits)**

The study design component will cover experimental studies/randomized controlled trials and observational studies. Analytic approaches will cover generalized linear modeling with multilevel extensions for correlated data using both Frequentist and Bayesian inferential approaches. Letter Graded

**CABS 5302 Biological Statistics and Study Design II (3 Credits)**

The study design component will cover advanced experimental studies/randomized controlled trials and observational studies including flexible/adaptive designs, SMART designs n-of-1 clinical trials and stepped wedge designs. This course will expand the use of generalized linear models to non-normal, continuous outcomes, additional discrete outcomes as well as time-to-event data with multilevel extensions for correlated data using both Frequentist and Bayesian inferential approaches. Letter Graded

**CABS 5303 Neurobiology and Neuroanatomy of Complex Behavior (3 Credits)**

This course will cover topics related to the foundations of neurobiology, including neurochemistry, molecular and cellular neuroscience (action potential, synaptic transmission, receptors, and plasticity), systems neuroscience, introduction to neuroanatomy, and their influence on behavior. Letter Graded

**CABS 5304 Models of Human Cognition and Behavior (3 Credits)**

In this course, students become familiar with human cognition and behavior through an in-depth examination of cutting-edge models and theories. Students will critically evaluate various theoretical frameworks, computational models, and empirical research, gaining insight into topics such as decision-making, memory, emotion, social interaction, and problem-solving. By synthesizing perspectives across different fields such as psychology, neuroscience, and cognitive science, this course equips students with a deeper comprehension of the intricate mechanisms underlying human thought and behavior, fostering a solid foundation for further academic pursuits and clinical applications. Letter Graded

**CABS 6211 Thesis (2 Credits)**

Design, conduct, analyze, and disseminate research under the direction of faculty advisor. The thesis is a substantive piece of scholarship involving primary and secondary research, which serves to demonstrate mastery over the discourse, methods, and content of a particular topic under the umbrella of Cognitive and Behavioral Sciences. Letter Graded

**CABS 6301 Biological Basis of Behavioral Disorders (3 Credits)**

This course will highlight current state of the art advances in technology that have led to an increased understanding of the biological basis of mental health disorders, including schizophrenia, bipolar disorder, depression, posttraumatic stress disorder, and substance use disorders. The course will include discussions on challenges that are unique to mental health disorders, and how knowledge of biological underpinnings can be translated to clinical treatments. The presentations will be led by researchers with expertise in the specific disorder, and will focus on recent publications on the topic, to facilitate an interactive discussion with students. Letter Graded

**CABS 6302 Advanced Assessment and Analysis of Behavior (3 Credits)**

This course will be focused on the design, methods and interpretation of outcomes research. The topics of this course will include utilization of novel technology to extract rich, ecologically valid behavioral data (e.g., virtual data collection, ecological momentary assessment, biosensors, integration of multimodal data), study design to allow accurate assessment of clinical trial outcomes and analysis of complex designs including latent variable models. At the end of this course, students will understand considerations for outcomes research, appropriate study design to support that research and interpretation of outcomes data. Letter Graded

**CABS 6303 Advanced Data Science for Neuroscience (3 Credits)**

Advanced data science for neuroscience will cover the fundamental principles of machine learning (e.g. data preparation for machine-learning algorithms, bias-variance trade-off, cross-validation to avoid overfitting, etc.), application of data mining algorithms (e.g. ridge/lasso regression, random forests, gradient boosting, etc.), coding for data preparation and implementation of data mining algorithms (e.g. R and/or Python coding) and interpretation of data mining algorithms (e.g. assessing discrimination, variable importance and Shapely scores, partial dependence plots etc.). Letter Graded

**CABS 6304 Applied Behavioral Genomics (3 Credits)**

This course will introduce students to topics related to genetics and its role in behavior and psychiatric disorders. Topics of discussion will include heritability, gene x environment interactions, genetic variation, epigenetics, principles of evolution, methods in the study of genomics, genetic basis of psychiatric disorders, and principles of bioinformatics. Classes will include lectures from experts in the field followed by journal club discussions of recent papers on the topics. Letter Graded

**CABS 9300 Research (3 Credits)**

Once a student selects a mentor, they will conduct hands-on research every semester in the area of choice, designing a focused study to complete during the program's duration, in consultation with the faculty mentor. Letter Graded