Test Content Outline
Psychopharmacology Examination for Psychologists (PEP)

01  Integrating clinical psychopharmacology with the practice of psychology (12%)

Refers to the implementation of clinical practices of biopsychosocial assessment, multiaxial diagnosis, and treatment including pharmacotherapy, in the context of a complex of factors influencing functioning. These factors include biological (e.g., genetic, sex, age, disease, disability), psychological (e.g. cognitive, emotional, dynamic, motivational, behavioral), psychosocial (e.g., gender, cultural/ethnic, interpersonal), and ecological/environmental factors.

0101 Biopsychosocial variables as determinants of medication effects (e.g., age, gender, family history, patient belief systems, economics, social support, current environmental circumstances)

0102 Limitations and benefits, patient perceptions, and treatment expectations regarding psychopharmacological and psychological interventions as sole, additive, or interactive treatments for given disorders and functional impairments

0103 Timing and sequencing of interventions to achieve maximum treatment effectiveness, including importance of patient instruction regarding FDA warnings

0104 Practitioner-patient partnership, including its impact on patient education, medication adherence, efficacy, adverse effects and response to side effects, and implications for the relationship when psychosocial and pharmacological interventions are utilized

0105 The development and implementation of a coherent and organized treatment plan of both psychosocial and pharmacological intervention with attention to co-morbidities, as well as evidence-based developments in psychotherapy

0106 Case and medication management issues and strategies to enhance adherence to and effectiveness of the treatment plan (e.g., communication skills, patient education techniques, cultural competence)

0107 Pharmacoeconomics in treatment planning (e.g., managed-care utilization review, formulary restrictions, affordability)

0108 Herbal and natural products (e.g., dietary supplements) used by immigrant and other groups
0 2  Neuroscience (8%)

Refers to the anatomy, physiology, and biochemistry of the nervous system and its interface with other major body systems.

0201  Cellular and molecular nervous system biology, biochemistry, and regulatory processes (e.g. neurotransmitter and neuromodulator systems, transcription, translation and genetic variability, neurotropic factors)

0202  The structure and function of the central and peripheral nervous systems

0203  Neurodevelopment and neuroplasticity

0204  The major neuronal pathways and their functions, and associated messenger systems

0205  The brain’s vascular system and the blood-brain and placental barriers

0206  The endocrine system’s interface with various other neurotransmitter systems

0 3  Nervous system pathology (8%)

Refers to disorders of the nervous system resulting in abnormal function. Includes structural biochemical, or neurophysiological abnormalities (congenital or acquired) and their impact on other body systems.

0301  Etiological factors and diagnosis of dementia, delirium, and other cognitive disorders

0302  Etiological factors and diagnosis of chronic pain, including headache (e.g., migrainous vs. non-migrainous headache), disc compression, neuropathic pain, fibromyalgia; and the role of the CNS in pain experience

0303  Etiological factors and diagnosis of sleep disorders

0304  Etiological factors and diagnosis of movement disorders (e.g., Parkinson’s, Huntington’s, Tourette’s syndrome)

0305  Etiological factors and diagnosis of intellectual disabilities (e.g., fetal alcohol syndrome, pervasive developmental disorders, Fragile-X syndrome)

0306  Etiological factors and diagnosis of central nervous system vascular disorders (e.g., cerebral vascular accidents, transient ischemic attacks)

0307  Etiological factors and diagnosis of seizure disorders

0308  Traumatic brain injury and postconcussive syndrome (e.g. sports and combat acquired injuries; diagnostic and interventional functional neuroimaging)
0309 Neurobehavioral/psychological disorders that have an hypothesized neuropathological basis (e.g., schizophrenia, affective disorders, anxiety, ADHD)

0310 Other nervous system pathology (e.g., multiple sclerosis, infectious diseases, exposure to environmental neurotoxins, neoplasms)

0311 Basic neurodiagnostic markers of neurobehavioral disorders (e.g., EEG, neuroimaging, neuropsychological assessment)

0312 The etiology/mechanism of drug-related extrapyramidal dysfunction associated with prescription medications, herbal remedies, and substances of misuse

04 Physiology and pathophysiology (8%)

Refers to normal physiology and pathophysiology across the life span, and to their impact on psychological functioning and psychopharmacology.

0401 Indications for referral to other health care providers for assessment or treatment when organ system pathology is indicated

0402 Cardiovascular system physiology and pathophysiology across the life span (e.g., rhythm and rate disorders such as prolonged QT interval), and their relationships to psychopharmacology and psychopathology (e.g., blood pressure changes secondary to psychotropic medication; mitral valve prolapse related to panic disorder)

0403 Pulmonary system physiology and pathophysiology across the life span, and their relationships to psychopharmacology and psychopathology (e.g., beta blockers and asthma)

0404 Basic renal/genitourinary system physiology and pathophysiology across the life span, and their relationships to psychopharmacology and psychopathology (e.g., effect of psychotropic substances on urinary/sexual functioning; role in excretion of wastes and medications)

0405 Basic hepatic system physiology and pathophysiology across the life span, and their relationships to psychopharmacology and psychopathology (e.g., first-pass metabolism, the interaction between psychotropic medication and liver enzymes, such as the cytochrome P450 system)

0406 Basic endocrine system physiology and pathophysiology across the life span, and their relationships to psychopharmacology and psychopathology (e.g., elevated prolactin and antipsychotic medications; hormonal disequilibrium; thyroid disorders; perimenstrual dysphoria)
0407 Basic hematological system physiology and pathophysiology across the life span, and their relationships to psychopharmacology and psychopathology (e.g., agranulocytosis and clozapine; anemia and depression)

0408 Basic muscular/skeletal/dermatologic system physiology and pathophysiology across the life span, and their relationships to psychopharmacology and psychopathology (e.g., hypercalcemia and depression; alopecia and valproic acid; OCD and trichotillomania)

0409 Basic immunologic/rheumatology system physiology and pathophysiology across the life span, and their relationships to psychopharmacology and psychopathology (e.g., systemic lupus erythematosus and depression; fibromyalgia and depression; AIDS-related dementia)

0410 Interface of psychological, physiological, and behavioral factors and their relationship in complex behaviors and processes involving multiple body systems (e.g., psychoneuroimmunology, sexual functioning)

0411 Relationship of complex behaviors involving multiple body systems with psychopharmacology and psychopathology (e.g., sympathetic nervous system side effects with psychostimulants; sexual dysfunction secondary to antidepressant medication)

05 Biopsychosocial and pharmacological assessment and monitoring (9%)

0501 Individual and family history taking procedures and psychological assessments that provide information relevant to prescribing (e.g., review of systems, dietary habits, mental status, behavioral observations)

0502 Basic physical and neurological examination procedures and variations in these procedures for special populations

0503 Appropriate utilization of laboratory tests and assessment procedures before prescribing particular medications (e.g., the implication of disease states, gender, sample timing, and effects of medications on those values)

0504 Indications and processes for psychotherapeutic drug monitoring (e.g., lithium blood levels, white blood cell monitoring with clozapine use)
0505 Behavioral assessment methods (e.g., rating scales, direct observation of behaviors, parent/teacher/self report) in baseline and ongoing monitoring of therapeutic effectiveness, quality of life, and adverse effects of psychopharmacological agents (e.g., extrapyramidal symptoms with antipsychotics)

0506 Indications for referral to other health care providers based on identification by abnormal biopsychosocial or pharmacological evaluation measures

0507 Intellectual and neuropsychological assessment as it pertains to aiding diagnosis (e.g., depression versus dementia, TBI versus PTSD), indications for medication regimens, and ability to provide informed consent

06 Differential diagnosis (11%)

Refers to the use of comprehensive diagnostic information about a patient to establish an accurate diagnosis from possible medical and psychological diagnoses in order to select appropriate treatment modalities and determine appropriateness for referral to other health care providers.

0601 Diagnostic systems (e.g., DSM, ICD, Adaptive Behavior Skills) and awareness of their limitations for diagnosis

0602 Medical disorders that present as psychological disorders (e.g., ADHD versus PKU versus autism, anxiety versus Graves’ disorder, dementia versus depression in the elderly)

0603 Psychological disorders that present as medical disorders (e.g., factitious disorders, somatization disorders, panic disorders).

0604 Psychological signs and symptoms (e.g., mental status changes, memory dysfunction, depression, psychosis) secondary to substances of abuse, prescribed and over-the-counter medications, herbal remedies, and supplements

0605 Varied presentations of psychological disorders in different populations (e.g., ADHD, bipolar disorder, and psychosis in children and adults)

0606 Use of psychological testing, physical, functional, laboratory, radiological assessment, and medication response to clarify diagnostic dilemmas (e.g., mood disorders versus endocrine disorders versus medication abuse)

0607 Psychopharmacological implications for mental health disorders with overlapping symptomatology (e.g., major depressive disorder with psychotic features, anxious depression)
0608 Dual diagnosis and comorbid conditions (e.g., double depression; alcoholism and schizophrenia; depression with Parkinson’s disease)

0609 Iatrogenic effects of medication versus primary symptoms of disease progression (e.g., akathisia versus anxiety; anticholinergic reactions versus dementia; medication induced tremor versus primary movement disorders)

0610 The implications of culture specific syndromes (e.g., koro, amok, ataque de nervios, evil eye/mal ojo) for the assessment and treatment of various ethnic and cultural groups

07 Pharmacology (10%)

Refers to the interactions of drugs with biological systems. Encompasses pharmacokinetics, pharmacodynamics, pharmacogenetics, and the use of various medications: psychotropics, adjunctive agents, and other medications; substances of abuse, over the counter (OTC) products, herbal, and other food and dietary supplements. The influence of ethnic and cultural factors, environmental factors, and responses of special populations are considered.

0701 Drug classifications for psychotropic and adjunctive medications (e.g., stimulants, sedatives, antidepressants, and anticholinergics), other drugs used in the practice of medicine, OTC medications, and substances of abuse

0702 Biological factors affecting pharmacokinetics and pharmacodynamics (e.g. sex, pregnancy, obesity)

0703 Absorption (e.g., delayed-release preparations, rates of absorption after oral dosing or parenteral injection, area under the curve, timing with food intake)

0704 Distribution (e.g., plasma protein binding, influence of lipophilicity)

0705 How drugs cross the blood-brain and placental barriers

0706 Metabolism (e.g., understanding of the substrate, inhibitors and inducers of the “family” of P450 enzymes, other enzymes outside the liver)

0707 Mechanisms of tolerance, dependence, and withdrawal

0708 Excretion (e.g., renal filtration rate, clearance of drugs)

0709 Importance of biological half-life in determining steady-state drug concentrations, dosing schedules, accumulation, and toxicity

0710 Drug properties and characteristics (e.g., therapeutic index, therapeutic blood levels/prescription doses, potency, bioavailability, efficacy, cognitive and behavioral manifestations of toxicity, dose response relationships)
0711 Types of drugs/receptor interactions (e.g., direct and indirect agonists, antagonists, and inverse agonists)

0712 Drug-induced cellular adaptation (e.g., cellular signaling, ion channels, second and other messengers, neurotransmitter release, sensitivity, supersensitivity)

0713 Drug effects on genetic expression (e.g., down-regulation)

0714 Specific neurotransmitters, receptors, modulators, and neuropeptide pathways and functions

0715 Mechanisms of action of a range of therapeutic agents with particular focus on psychotropic and adjunctive medications

0716 Theoretical relationships between neurotransmitter systems and psychopathological conditions based on known mechanisms of action and clinical observations (e.g., roles of serotonin in depression, dopamine in psychosis and substance abuse)

0717 Drug-drug and drug-food interactions for a range of medications as well as substances of abuse, supplements, and other OTC products

0718 Intra- and interindividual variations in drug responsivity

0719 Drug-induced disease, dysfunction, and adverse reactions (e.g., hepatotoxicity, agranulocytosis, dystonias)

0720 Genetic polymorphisms (e.g., ethnic and gender differences, genomic testing, differences in cytochrome P450 isoenzymes in drug metabolism)

0721 Familial patterns of drug response and toxicity

0722 Pharmacoepidemiology (e.g., epidemiology of psychotropic drug use)

08 Clinical psychopharmacology (12%)

Refers to the application of pharmacology to the management of psychological/behavioral disorders. This includes indications, contraindications, dosing, risk management, adverse effects and toxicities of psychotropic and adjunctive medications, interactions with other medications (including other drugs used in medicine, prescription and/or illicit drugs used for recreational purposes, and drugs available for OTC purchase) as well as the management of adverse reactions, overdoses, and toxicities.

0801 Indications, contraindications, and off label uses of various psychotropic and adjunctive medications
0802  Decision making strategies for psychotropic medication selection (e.g., risk-benefit analysis, practice guidelines)

0803  Dosing, time course of therapeutic action and adverse effects, and patient factors (e.g., weight, gender, ethnicity, culture, age, concurrent disease)

0804  Augmentation strategies and dose adjustment (e.g., titration, cross taper, discontinuation)

0805  Routes of administration (e.g., oral, intramuscular, intravenous, inhalation, transdermal) and differential response

0806  Specific drug toxicities, management of adverse reactions, including overdose, and indications for referral for appropriate medical care (e.g., acute allergic reaction, extrapyramidal symptoms, hypertensive crisis)

0807  Interactions of psychotropic and adjunctive medications with other medications (including other drugs used in medicine, prescription and/or illicit drugs for recreational purposes, and drugs available for OTC purchase)

0808  Relapse prevention, maintenance, and prophylaxis (e.g., strategies for sustaining remission of substance abuse, improving treatment compliance, preventing recurrence of depression)

0809  Drug effects in special populations (e.g., developmentally disabled, elderly, children, pregnant or lactating women, ethnic and cultural groups, substance abusing individuals)

0810  Pharmacological implications for comorbidity of age-related and disability-related disorders (e.g., overanxious disorder comorbid with ADHD, avoiding using a tertiary tricyclic in an elderly patient using antihypertensives)

0811  Potential psychological and physiological manifestations of medications (including OTC drugs, herbal substances, and dietary and exercise supplements) used for nonpsychological purposes (e.g., beta blockers, steroids)

0812  Psychological and physiological manifestations of various recreational substances and treatment of intoxication or addiction, including strategies for assisted withdrawal, maintenance, and relapse prevention

0813  How to recognize and manage tolerance, cross-tolerance, dependence and withdrawal, sensitization/cross-sensitization with respect to specific medications

0814  Drug-seeking behavior, and potential for abuse of prescription medications
Educational techniques effective to inform patients of different cultural backgrounds about drug utilization, risks, benefits, potential complications, and alternatives to pharmacotherapy

09 Research (7%)

Refers to the methodology, standards, and conduct of research on psychoactive substances. The knowledge base facilitates research design and implementation including attention to the representativeness of population sample, accurate data interpretation, communication of results, effective utilization of findings, the accumulation of scientific knowledge, and the improvement of the practice of clinical psychopharmacology.

0901 Psychopharmacological electronic retrieval systems and data bases

0902 Research designs and analytic techniques used in psychopharmacological research (e.g., drug washout, dose response relationships, intent-to-treat analyses, within-subject and group designs, use of “rescue” medications, and concurrent administration of other drugs)

0903 The FDA drug development process

0904 Methodological issues in psychopharmacological research (e.g., sample heterogeneity, drug levels, monitoring procedures, generalizability issues)

0905 Community and participatory research strategies to enhance the relevance of studies with ethnic/cultural and other underserved populations (e.g., use of community advisory boards, community involvement in research planning)

0906 Regulatory issues in psychopharmacological research conducted by psychologists (e.g., FDA regulations and warnings, HIPAA, research funded by pharmaceutical companies, Institutional Review Board, safety, abuse liability)

0907 How to critically review clinical research data including nonscientifically based therapies and emerging research methodologies, and use the information for making treatment decisions

0908 Current status of research regarding specific medications with psychoactive properties

0909 Evidence-based research regarding complementary and alternative medicines

0910 Risk management strategies (e.g., reduction of medical errors, monitoring drug side effects) in the conduct of research
10 Professional, legal, ethical, and interprofessional issues (8%)

Refers to knowledge of ethics, standards of care, laws, and regulations relevant to the practice of psychology involving psychopharmacology.

1001 Ethical codes and standards as they pertain to pharmacological practice

1002 Practice guidelines and standards of care for prescribing psychotropic medications

1003 The use of electronic health records, databases, and the potential impact on privacy/confidentiality (e.g., HIPAA)

1004 Laws and statutes for prescribing psychotropic medications (e.g., FDA regulations, Medicare, controlled substance laws, specifics of psychologists’ licensing laws, patients’ rights)

1005 Issues involved in collaboration/consultation with other health care providers who are also prescribers and/or psychotherapists (e.g., primary responsibility for patients, when to refer or seek consultation, differences in theoretical orientation, triangulation, appropriate levels of disclosure, medical home participation)

1006 Provision of psychotropic medications within specific environments (e.g., classrooms, correctional institutions, military, substance abuse facilities, workplaces, residential and hospital-based settings)

1007 Patients’ rights (e.g., informed consent, right to refuse treatment, right to treatment within the least restrictive environment, duty to warn, and privileged communication)

1008 Issues regarding relationships with pharmaceutical companies (e.g., acceptance of gifts, revealing sources of funding and affiliations)

11 Diversity factors (7%)

Considers the impact of diversity factors (e.g., ethnicity, age, sex, gender role, culture, disability, and socioeconomic factors) on research, assessment, diagnosis, and treatment

1101 Diversity-related variations in the incidence/prevalence of disorders

1102 Variations in help-seeking patterns as a function of diversity factors

1103 Genetic differences in drug metabolism and clearance

1104 Differences in adverse reactions to medications as a function of ethnicity and other diversity factors

1105 Psychosocial factors in drug effects/response
1106 Cultural and diversity relevant assessments and treatments

1107 Variations in trauma exposure and response

1108 Variations in environmental stressors