

CHEM 4490: Drugs, Toxins Natural Products Chemistry E1 Study list

Item	Subject	Topic
1	Intro/Background	Herbalism classification - astringents, drawing agents, emollients, demulcents, expectorants, laxatives, acrid/irritants, sedatives, purgatives, diuretics, diaphoretics, emetics
2	Intro/Background	Therapeutic Index
3	Intro/Background	Drug classification strategies: drawbacks
4	Intro/Background	Cell & organelle membrane structure
5	Intro/Background	Lipids as drug/toxin targets
6	Intro/Background	Carbohydrates as drug/toxin targets
7	Intro/Background	Carbohydrates: potential as pharmaceuticals
8	Proteins & Enzymes	Proteins: Amino acids (structure, classification)
9	Proteins & Enzymes	Proteins: 1o, 2o, 3o and 4o structure
10	Proteins & Enzymes	Protein folding and "native" structures
11	Proteins & Enzymes	Protein functions
12	Proteins & Enzymes	Enzymes: function, effect on reactions, regulation
13	Proteins & Enzymes	enzyme inhibition: competitive, irreversible, noncompetitive
14	Receptors	Divisions of nervous systems: central, peripheral, efferent, somatic, autonomic, sympathetic, parasympathetic
15	Receptors	Hormonal system: endocrine
16	Receptors	Chemical messengers: neurotransmitters, hormones, and local mediators (histamine, prostaglandins, nitric oxide, etc.)
17	Receptors	Receptors: Ligand-gated ion channels
18	Receptors	Receptors: Receptor enzymes
19	Receptors	Receptors: G protein-coupled receptors
20	Receptors	Receptors: intracellular (cytoplasmic)
21	Receptors	Role of second messengers in signal transduction
22	Receptors	Agonists & Antagonists: function, varieties, bonding properties
23	Nucleic Acids	Nucleic Acids: 1o, 2o, and 3o structure
24	Nucleic Acids	Nucleic Acids: Intercalating agents
25	Nucleic Acids	Nucleic Acids: Alkylating agents
26	Nucleic Acids	Nucleic Acids: Chain cutters
27	Nucleic Acids	Nucleic Acids: nucleotide analogs
28	Nucleic Acids	RNA: antisense molecules
29	Nucleic Acids	Biotechnology: present and future therapeutic roles
30	Discovery, Design & Development	Drug Targets: precautions
31	Discovery, Design & Development	Bioassays: in vitro and in vivo tests
32	Discovery, Design & Development	Lead compounds vs. pharmacore
33	Discovery, Design & Development	Sources of lead compounds
34	Discovery, Design & Development	Structure determination: X-ray crystallography, NMR and Mass Spec
35	Discovery, Design & Development	Common functional groups: bonding, chemical properties
36	Discovery, Design & Development	Pharmacore modification: purpose and chemical strategies
37	Discovery, Design & Development	Drugs: chemical stability issues
38	Discovery, Design & Development	Drug metabolism
39	Discovery, Design & Development	Drug distribution & retention
40	Discovery, Design & Development	Toxicity
41	Discovery, Design & Development	Drug Delivery & Dosing
42	Discovery, Design & Development	Clinical trials of candidate drugs