The midterm exam will include all materials starting from the beginning of the course.
Consequently, the Checklist for the Quiz is also applicable and all items should be reviewed.

Conformation

describe conformational mobility
define Newman projection, dihedral angle
transform "wedge&dash" to Newman structures & *v.v.*
describe & draw eclipsed & staggered conform^{s} (incl. antiperiplanar, gauche, …)
describe torsional, steric and angle strain
assess relative energy values based on angle of rotation(dihedral angle)
identify preferred conformations
describe major causes for ring strain
describe how "puckering" reduces ring strain
give 3D representations of the cycloalkanes C_3H_6, C_4H_8, C_5H_{10} , C_6H_{12}
for cyclohexanes:
- distinguish between equatorial and axial positions
- realize consequences of "ring flipping" on eq./ax., cis/trans, top/bottom relationships
- assess steric strain in substituted cyclohexanes, especially strain due to 1,3 diaxial interferences
- identify preferred conformation of mono- and multi-substituted cyclohexanes

describe *cis* & *trans* fused ring systems (esp. decalins & steroids); identify & apply concepts of axial, equatorial, cis, trans, ringflipped substitution patterns to fused rings

Stereochemistry

define/describe terms:
- mirror image, plane of symmetry,
- chiral/achiral, optically active,
- block diagram/ functioning of a polarimeter,
- optical rotation α_D and specific rotation $[\alpha]_D$,
- stereogenic centers;
- enantiomers (optical isomers),
- diastereomers, meso cmpds, racemates

R/S configuration: priority rules, R/S assgnmt
cmpds w/ multiple stereogenic centers
Fischer projection, define convention
interconvert between "wedge&dash", Fischer and Newman projections
define various classes of isomers (constitutional, stereoisomers (diastereomers & enantiomers))
distinguish between identical conformers,
- identical compounds, enantiomers,
- diastereomers (incl. cis/trans isomers)
- & constitutional isomers,
- (and, of course, "non-isomers")

effect of chem. rxns on chirality
resolution of racemic mixtures (general scheme)

Nucleophilic Substitution & Elimination

general terminology
define/ describe S_N2 rxns in terms of rate law, transition state, rxn diagram, rxn mechanism, effect on chirality