

## MODULE 5 CHEAT SHEET

Key concepts and quick references from Environmental Design.

### PASSIVE SOLAR DESIGN

#### Orient South

Longest walls face south for maximum winter sun exposure.

#### Thermal Mass

Dense materials (concrete, stone) absorb day heat, release it at night.

#### Overhangs

Shade south windows in summer (high sun), admit winter sun (low angle).

#### Minimize West

West glass causes overheating – use small windows or shading.

### GLAZING BY FACADE

**South** Largest windows – consistent sun, easy to shade.

**North** Soft even light, no direct sun. Studios, offices.

**East** Morning light – welcome and manageable.

**West** Caution – low, hot afternoon sun. Shade needed.

### NATURAL VENTILATION

#### Cross Ventilation

Openings on opposite walls pull breeze through the room.

#### Stack Effect

Warm air rises and exits high; cool air enters low.

#### Night Flushing

Open windows at night to cool thermal mass for the next day.

### EARTH & INSULATION

#### Thermal Mass

Stone, concrete, brick store heat and smooth temperature swings.

#### Earth-Sheltering

Building into slopes uses soil as insulation on 3 sides.

#### Foundation Insulation

Rigid foam under slab and along perimeter cuts energy loss.

#### Geothermal

Ground-source heat pumps use stable earth temperature (50–60°F).

### TEXTURE EFFECTS

- Rough surfaces absorb sound; smooth surfaces reflect it
- Polished surfaces create glare; textured surfaces diffuse light
- Stone and tile feel cold underfoot; wood and cork feel warm
- Acoustic, luminous, and thermal effects are as important as looks

### EXERCISE CHECKLIST

- Window sketch with sun angles marked
- Earth-sheltered cross-section drawn
- Site map: wind, sun, shade, sound
- Room A vs Room B texture comparison
- Environmental Response Diagram completed