

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

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|--------------|---|
| 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