## .1 General System Design

.1 Use air systems in combination with perimeter radiation. Perimeter radiation shall be capable of being operated independent of the air system.

.2 Avoid all air systems.

.4 Zone mechanical systems by intended occupancy, separate interior and exterior zones.

.5 Provided reheat coils in each interior zone.

.6 All air handling units shall have heating or preheat coils even if building load indicate that one is not required.

.7 Proposed fan volume control schemes based on building static pressure must have prior approval from FMGT.

.8 Do not specify variable pitch in motion fans.

.9 Design all air handling units with minimum 15% spare volumetric and static pressure capacity.

.10 Buildings with no mechanical cooling (typical) shall have cooling circulation air increased by minimum of 25% or have sufficient volume to meet WCB requirements with respect to maximum space temperature, whichever is greater. Consider additional costs of construction and compare to cost of adding and operating mechanical cooling.

.11 Radiant heating panels shall not face windows.

.12 Provide separate exhaust to all photocopier rooms or areas. Exhaust to outdoors.

.13 Ensure sufficient air mixing within the occupied space on VAV systems under all operating conditions.

.14 VAV systems shall have reheat coils.

.15 Window mounted air conditioners and exhaust fans are not acceptable.

.16 All exhaust ductwork within the building shall be under negative pressure.

.17 Specify separate ventilation and heat recovery systems for Mechanical and Electrical rooms.

.18 Do not specify sidewall supply registers for classroom applications.

.19 Laboratory design shall meet best practices of applicable AHRAE design standards, and /or the equivalent CSA standard recognized by the BC Building Code.

.20 Return and supply fans requiring volumetric tracking shall have same type devices for volume control, i.e. inlet dampers must be only used with inlet dampers, VFD’s with VFD’s etc.

.21 If fume hood exhaust systems are located in mechanical penthouses they shall be located in separate self contained area within the Mechanical Penthouse.

.22 Where fume hood fans are contained within mechanical penthouses, pressurize the penthouse with supply air from the building from a safe outside source to avoid the possibility of recirculation exhaust air into the service space and to provide flushing of contaminants if a minor duct leak occurs. Fumes from industrial lab process shall be removed from spaces by the use of dedicated exhaust systems (not recirculation permitted).

.23 Ventilations systems shall be designed to limit bio-contamination. Spaces containing 'like-risks' can share ventilation systems, while bio and chemical ventilation systems shall be separated to avoid cross contamination.

.24 Humidification shall be applied to each specific zone which requires local control. Avoid upstream humidification and downstream dehumidification.

**.2 Air Outlets and Inlets**

.1 Do not specify balancing dampers at the face of air outlets and inlets. Locate balancing dampers sufficient distance into the ductwork to maintain acceptable sound level within the conditioned space. (NC 30 35 or less)

.2 Co-ordinate with architectural discipline.

**.3 Outside Air Intake Louvers**

.1 Locate outside air intake louvers as far away as practical from all sources of contamination; avoid locating intakes at loading docks, fume hood exhausts, generator exhausts. Outside air intake louvers are not to be located on roof tops where fume hood exhausts are located.

.2 Locate outside air intake louvers as high as possible above grade and shall not be at grade level.

.3 Where below grade intakes are unavoidable install bird/debris screen on outside of the louvers.

.4 Where roof top parapets or screening hinder effective cross ventilation exhaust discharges, plumbing stacks and other contaminated discharges shall be elevated above air intakes at a minimum distance proscribed by code/regulation and/or good engineering practices.

**.4 Painting**

.1 Specify corrosion resistant primer paint to ferrous supports and site fabricated work (pewter gray).

**.5 Salvage**

.1 UVic does not have extensive storage facilities for salvaged material. Air conditioners, motors, variable frequency drives in good condition have previously been considered for salvage. Occasionally a small fan or a fume hood in good condition has been salvaged.

.2 On renovation projects the Consultant shall submit a list of items to be considered for salvage to Facilities Management at the start of the design stage. The Consultant shall coordinate with Facilities Management to determine all materials to be salvaged which shall then be clearly specified.

.3 The Mechanical Shop prefers the Contractor to remove the materials and move them to a designated storage place on campus.

.4 All materials to be salvaged shall carefully removed and handled to prevent damage and the contractor shall obtain a signed receipt from the Mechanical Shop for all salvaged materials.

**.6 Photocopier exhaust.**

.1 Provide exhaust air from photocopier rooms, areas with large photocopiers (larger than a typical office copier) and areas for regular large copy production.