Central Timetabling System

Simulate a timetabling system for the D.I.T. School of Computing. Some of the criteria are as follows:

There are several locations in which rooms can be, Aungier St (prefix A), Kevin St (Main building) (prefix KE), Kevin St Annexe (Prefix KA). The first digit of the room number is the floor, the second two digits are the room number of that floor. Each room has a type (lab, classroom,etc), a capacity (number of staff and students) and a few Booleans (e.g. blackboard, whiteboard, datascreen, dataprojector, etc). No room can be booked by more than one class at a time. A class is a group made up of a course code and stage number. Each module is represented by a unique number called a CRN. The module also has a name and a type. The type can be single-semester or linked module (denoting that it goes on over 2 semesters). Each module has a set number of contact hours in a week; for example, DT228/3 Database Technology is a single semester module with 3 contact hours per week – one lecture hour, one lab hour and one tutorial hour. Each module has one lecturer.

(For this exercise, there is no need to take into account situations where the class is spread over two labs).

Given the two sample fictional timetables (one for a lecturer, one for a class) design the conceptual schema for this system.

The following constraints are part of the system:
No two classes can be in the same room at the same time.
No lecturer should be scheduled for more than 20 hours.
Each class has a maximum number of contact hours in the year. No class should be scheduled for more than that maximum number of hours.
No class should be scheduled for more than four consecutive hours.
No lecturer should be scheduled for more than four consecutive hours.
A lab session must take place in a lab.
A lecture or a tutorial must take place in a classroom.
Fictional class timetable
Fictional Lecturer timetable

A school coordinator allocates modules to semesters and can allocate numbers to classes and can allocate lecturers to modules.

A building manager enters room details and alters room details. He / she can withdraw a room from service, or change its functionality from a classroom to an office, or an office to a lab. He / she can also allocate capacity numbers to any room on the premises.

A technician can enable / disable a lab and allocate capacity numbers to it. He/she can allocate or alter capacity numbers to it.

A rooms coordinator allocates rooms to schools. This is reviewed at every semester, to ensure that the numbers studying modules in each school corresponds with the number of rooms that are in use.

A lecturer can allocate numbers to modules (i.e. how many are studying a certain module).

A school coordinator can request / relinquish rooms to the system.

If a room becomes unavailable, then the classes scheduled for that room must be reallocated.