1 Classes

$$
\begin{aligned}
\text{course} &= \{\text{name, min\_hours, max\_hours}\} \\
\text{requirement} &= \{\text{name, min\_hours, max\_hours min\_grade, take,} \\
&\qquad \text{subrequirements: [Courses, Requirements]}\} \\
\text{student\_course} &= \{\text{name, hours, grade}\} \\
\text{wildcard} &= \{\text{code, match, min\_number, max\_number, min\_hours, exclude}\}
\end{aligned}
$$

2 Operators

$$
\begin{aligned}
\mathcal{B}(R) &: \forall sub \in R_{subrequirements}, sub\text{: Course} \\
S \simeq C &: S_{name} = C_{name} \\
\{S_1, \ldots, S_n\} \Cap R &: \{s \mid s \in S, \exists c \in R_{sub} \colon s \simeq C, R_{min\_grade} \preceq S_{grade}\}, \mathcal{B}(R) \\
|R| &: \sum_{sub \in R} sub_{hours}, \mathcal{B}(R) \\
R_1 \Cup R_2 &: \text{Requirement}(\text{max\_hours} = \min\{\min\{R_{1.hours}, |R_{1.sub} \setminus R_{2.sub}|\} + \\
&\qquad \min\{R_{2.hours}, |R_{2.sub} \setminus R_{1.sub}|\} + \\
&\qquad |R_{1.sub} \cup R_{2.sub}|, R_{1.hours} + \\
&\qquad R_{2.hours}\}, \\
&\qquad \text{subrequirements} = [R_{1.sub} \cup R_{2.sub}]) \\
\{S_1, \ldots, S_n\} \vdash R &: |\{S_1, \ldots, S_n\} \Cap R_{sub}| \geq R_{hours}, |\{S_1, \ldots, S_n\} \Cap R| \geq R_{take}, \mathcal{B}(R) \\
\{S_1, \ldots, S_n\} \vdash R &: \Cup_{sub \in R_{sub}} |\{S_1, \ldots, S_n\} \vdash sub| \Cup \\
&\qquad \text{Requirement}\left(\{S_1, \ldots, S_n\} \uplus \{sub \mid sub \in R_{sub}, sub\text{: Course}\}\right)
\end{aligned}
$$