MIP School Scheduling

Will Kearney, Sonimar Poppe, Niguel Morfin, and Asrar Ahmed Syed

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1 Model Formulation

1.1 Variables

$$X_{s,t,c,p,d} \in \{0, 1\} \tag{1}$$

where $X_{s,t,c,p,d}$ is a binary decision variable indicating whether student $s \in S$ is assigned to teacher $t \in T$ for class $c \in C$ in period $p \in P$ on day $d \in D$ ($X_{s,t,c,p,d} = 1$ if student is assigned, 0 otherwise).

1.2 Constraints

$$\sum_{t=1} \sum_{c=1} \sum_{p=1} X_{s,t,c,p,d} = 7 \quad \forall s, d \tag{2}$$

Constraint 2 ensures that every student is fully scheduled (i.e. taking a full 7 periods each day).

Table 1: The notation used in our formulation

S	Set of students
T	Set of teachers
C	Set of courses
P	Set of periods
D	Set of days