$[STUDENT, MODULE]$

$$prereq : MODULE \leftrightarrow MODULE$$
$$prereq^+ \cap \operatorname{id} MODULE = \varnothing$$

Enrolled
$enrolled : \mathbb{F}\ STUDENT$
$module : \mathbb{F}\ MODULE$
$registered : STUDENT \leftrightarrow MODULE$

$registered \in enrolled \leftrightarrow module$

Enrol
$\Delta Enrolled$
$e? : STUDENT$

$e? \notin enrolled$
$enrolled' = enrolled \cup \{e?\}$
$module' = module$
$registered' = registered$

Register
$\Delta Enrolled$
$e? : STUDENT$
$m? : MODULE$

$e? \in enrolled$
$m? \in module \setminus registered (\!|\ \{e?\}\ |\!)$
$enrolled' = enrolled$
$module' = module$
$registered' = registered \cup \{e? \mapsto m?\}$

```
┌─ Deregister ─────────────────────────────────────────
│ ΔEnrolled
│ e? : STUDENT
│ m? : MODULE
│
├──────────────
│ e? ∈ enrolled
│ m? ∈ registered ⦇ {e?} ⦈
│ registered' = registered \ {e? ↦ m?}
└──────────────────────────────────────────────────────
```

```
┌─ Transfer ───────────────────────────────────────────
│ ΔEnrolled
│ e? : STUDENT
│ from? : MODULE
│ to? : MODULE
├──────────────
│ e? ↦ from? ∈ registered
│ to? ∈ module \ {from?}
│ e? ↦ to? ∉ registered
│ registered' = registered \ {e? ↦ from?} ∪ {e? ↦ to?}
│ enrolled' = enrolled
│ module' = module
└──────────────────────────────────────────────────────
```