



Figure 6.24 Replacement of *takes* by *registration* and two relationship sets.

student takes a (section of a) course. An alternative is to imagine that there is a course-registration record for each course that each student takes. Then, we have an entity set to represent the course-registration record. Let us call that entity set *registration*. Each *registration* entity is related to exactly one student and to exactly one section, so we have two relationship sets, one to relate course-registration records to students and one to relate course-registration records to sections. In Figure 6.24, we show the entity sets *section* and *student* from Figure 6.15 with the *takes* relationship set replaced by one entity set and two relationship sets:

- *registration*, the entity set representing course-registration records.
- *section_reg*, the relationship set relating *registration* and *course*.
- *student_reg*, the relationship set relating *registration* and *student*.

Note that we use double lines to indicate total participation by *registration* entities.

Both the approach of Figure 6.15 and that of Figure 6.24 accurately represent the university's information, but the use of *takes* is more compact and probably preferable. However, if the registrar's office associates other information with a course-registration record, it might be best to make it an entity in its own right.

One possible guideline in determining whether to use an entity set or a relationship set is to designate a relationship set to describe an action that occurs between entities. This approach can also be useful in deciding whether certain attributes may be more appropriately expressed as relationships.

6.9.4 Binary versus *n*-ary Relationship Sets

Relationships in databases are often binary. Some relationships that appear to be nonbinary could actually be better represented by several binary relationships. For instance, one could create a ternary relationship *parent*, relating a child to his/her mother and father. However, such a relationship could also be represented by two binary relationships, *mother* and *father*, relating a child to his/her mother and father separately. Using