Translating English Sentences to First Order Logic

In the following, it is important to remember the precedence of the operators, which are (from highest to lowest): ¬ (NOT), ∧ (AND), ∨ (OR), ⇒ (IMPLIES), ⇔ (EQUIV). Notice also that there are always several (equivalent) sentences in first-order logic that correspond to a given English sentence. We provide only one example.

All students are smart.
∀x (Student (x) ⇒ Smart (x))

There exists a student.
∃x Student(x)

There exists a smart student.
∃x (Student(x) ∧ Smart (x))

Every student loves some student.
∀x (Student(x) ⇒ ∃y (Student(y) ∧ Loves(x,y)))

Every student loves some other student.
∀x (Student(x) ⇒ ∃y (Student(y) ∧ ¬(x=y) ∧ Loves(x,y)))

There is a student who is loved by every other student.
∃x (Student(x) ∧ ∀y (Student(y) ∧ ¬(x=y) ⇒ Loves(y,x)))

Bill is a student.
Student(Bill)

Bill takes either Analysis or Geometry (but not both).
Takes(Bill,Analysis) ⇔ ¬Takes(Bill,Geometry)

Bill takes Analysis or Geometry (or both).
Takes(Bill,Analysis) ∨ Takes(Bill,Geometry)

Bill takes Analysis and Geometry.
Takes(Bill,Analysis) ∧ Takes(Bill,Geometry)

Bill does not take Analysis.
¬Takes(Bill,Analysis)

No student loves Bill.
¬∃x (Student(x) ∧ Loves(x,Bill)

Bill has at least one sister.
∃x SisterOf(x,Bill)

Bill has no sister.
$\neg \exists x \, \text{SisterOf}(x,\text{Bill})$

Bill has at most one sister.
$\forall x \, \forall y \, (\text{SisterOf}(x,\text{Bill}) \wedge \text{SisterOf}(y,\text{Bill}) \Rightarrow x=y)$

Bill has exactly one sister.
$\exists x \, (\text{SisterOf}(x,\text{Bill}) \wedge \forall y \, (\text{SisterOf}(y,\text{Bill}) \Rightarrow x=y))$

Bill has at least two sisters
$\exists x \, \exists y \, (\text{SisterOf}(x,\text{Bill}) \wedge (\text{SisterOf}(y,\text{Bill}) \wedge \neg(x=y))$

Every student takes at least one course.
$\forall x \, (\text{Student}(x) \Rightarrow \exists y \, (\text{Course}(y) \wedge \text{Takes}(x,y)))$

Only one student failed History.
$\exists x \, (\text{Student}(x) \wedge \text{Failed}(x,\text{History}) \wedge \forall y \, (\text{Student}(y) \wedge \text{Failed}(y,\text{History}) \Rightarrow x=y))$

No student failed Chemistry, but at least one student failed History.
$\neg \exists x \, (\text{Student}(x) \wedge \text{Failed}(x,\text{Chemistry})) \wedge \exists x \, (\text{Student}(x) \wedge \text{Failed}\,(x,\text{History}))$

Every student who takes Analysis also takes Geometry.
$\forall x \, (\text{Student}(x) \wedge \text{Takes}(x,\text{Analysis}) \Rightarrow \text{Takes}(x,\text{Geometry}))$

No student can fool all the other students.
$\neg \exists x \, (\text{Student}(x) \wedge \forall y \, (\text{Student}(y) \wedge \neg(x=y) \Rightarrow \text{Fools}(x,y)))$