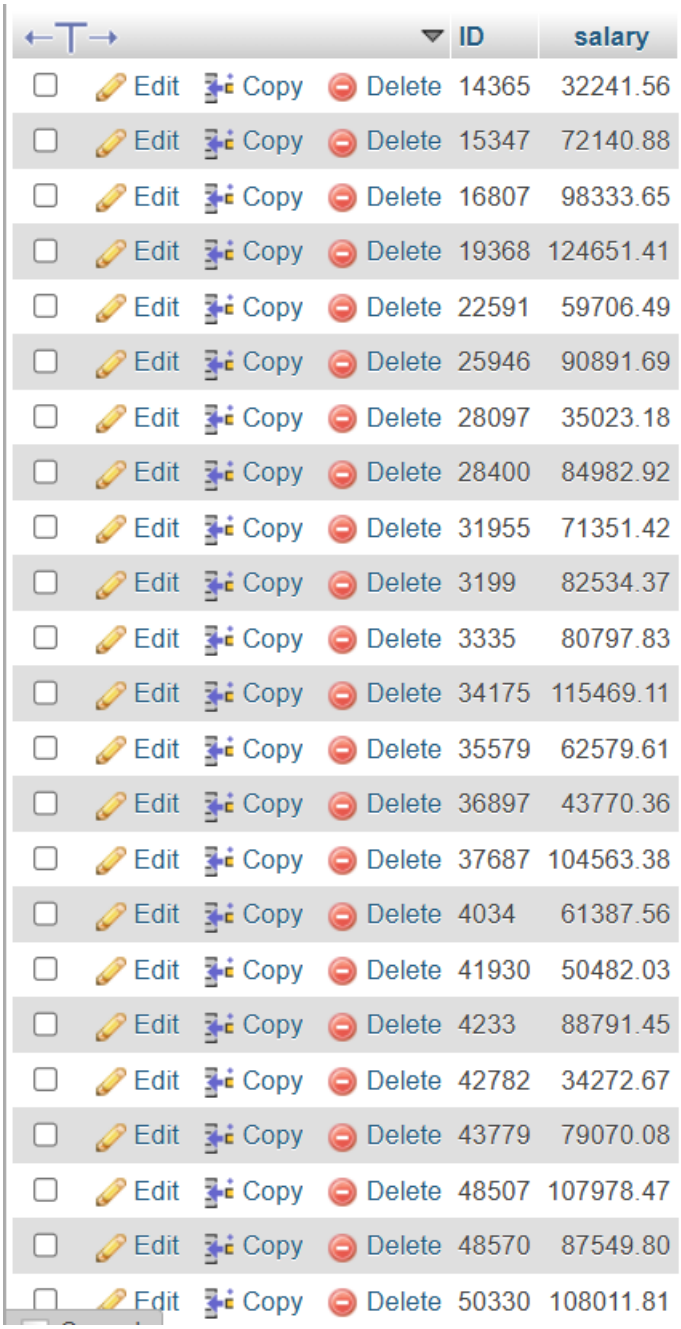
1. Find out the ID and salary of the instructors.

```
SELECT ID, salary FROM instructor;
```



	ID	salary
Edit Copy Delete	14365	32241.56
Edit Copy Delete	15347	72140.88
Edit Copy Delete	16807	98333.65
Edit Copy Delete	19368	124651.41
Edit Copy Delete	22591	59706.49
Edit Copy Delete	25946	90891.69
Edit Copy Delete	28097	35023.18
Edit Copy Delete	28400	84982.92
Edit Copy Delete	31955	71351.42
Edit Copy Delete	3199	82534.37
Edit Copy Delete	3335	80797.83
Edit Copy Delete	34175	115469.11
Edit Copy Delete	35579	62579.61
Edit Copy Delete	36897	43770.36
Edit Copy Delete	37687	104563.38
Edit Copy Delete	4034	61387.56
Edit Copy Delete	41930	50482.03
Edit Copy Delete	4233	88791.45
Edit Copy Delete	42782	34272.67
Edit Copy Delete	43779	79070.08
Edit Copy Delete	48507	107978.47
Edit Copy Delete	48570	87549.80
Edit Copy Delete	50330	108011.81

2. Find out the ID and salary of the instructor who gets more than $85,000.

```
SELECT ID, salary FROM instructor WHERE salary > 85000;
```

	ID	salary
Edit Copy Delete	16807	98333.65
Edit Copy Delete	19368	124651.41
Edit Copy Delete	25946	90891.69
Edit Copy Delete	34175	115469.11
Edit Copy Delete	37687	104563.38
Edit Copy Delete	4233	88791.45
Edit Copy Delete	48507	107978.47
Edit Copy Delete	48570	87549.80
Edit Copy Delete	50330	108011.81
Edit Copy Delete	52647	87958.01
Edit Copy Delete	63287	103146.87
Edit Copy Delete	63395	94333.99
Edit Copy Delete	6569	105311.38
Edit Copy Delete	73623	90038.09
Edit Copy Delete	74420	121141.99
Edit Copy Delete	74426	106554.73
Edit Copy Delete	77346	99382.59
Edit Copy Delete	79653	89805.83
Edit Copy Delete	90376	117836.50
Edit Copy Delete	95709	118143.98
Edit Copy Delete	96895	119921.41
Edit Copy Delete	99052	93348.83

3. Find out the department names and their budget at the university.

```
SELECT dept_name ,budget FROM department;
```

	dept_name	budget
Edit Copy Delete	Accounting	441840.92
Edit Copy Delete	Astronomy	617253.94
Edit Copy Delete	Athletics	734550.70
Edit Copy Delete	Biology	647610.55
Edit Copy Delete	Civil Eng.	255041.46
Edit Copy Delete	Comp. Sci.	106378.69
Edit Copy Delete	Cybernetics	794541.46
Edit Copy Delete	Elec. Eng.	276527.61
Edit Copy Delete	English	611042.66
Edit Copy Delete	Finance	866831.75
Edit Copy Delete	Geology	406557.93
Edit Copy Delete	History	699140.86
Edit Copy Delete	Languages	601283.60
Edit Copy Delete	Marketing	210627.58
Edit Copy Delete	Math	777605.11
Edit Copy Delete	Mech. Eng.	520350.65
Edit Copy Delete	Physics	942162.76
Edit Copy Delete	Pol. Sci.	573745.09
Edit Copy Delete	Psychology	848175.04
Edit Copy Delete	Statistics	395051.74

4. List out the names of the instructors from Computer Science who have more than $70,000.

```
SELECT name FROM instructor WHERE dept_name = 'Computer
Science' AND salary > 70000;
```

5. For all instructors in the university who have taught some course, find their names and the course ID of all courses they taught.

```
SELECT i.name, t.course_id FROM instructor i JOIN teaches t ON i.ID = t.ID;
```

name	course_id
Lembr	200
Lembr	843
Bawa	457
Wieland	545
Wieland	581
Wieland	591
DAgostino	338
DAgostino	338
DAgostino	352
DAgostino	400
DAgostino	400
DAgostino	482
DAgostino	599
DAgostino	642
DAgostino	663
DAgostino	867
DAgostino	962
DAgostino	972
DAgostino	991
Liley	192
Kean	366
Kean	808
Atanassov	603
Atanassov	604
Gustafsson	169

6. Find the names of all instructors whose salary is greater than at least one instructor in the Biology department.

```
SELECT DISTINCT i1.name FROM instructor i1 WHERE i1.salary > (SELECT MIN(i2.s
alary) FROM instructor i2 WHERE i2.dept_name = 'Biology');
```

←T→	name
Edit Copy Delete	Yazdi
Edit Copy Delete	Wieland
Edit Copy Delete	DAgostino
Edit Copy Delete	Liley
Edit Copy Delete	Atanassov
Edit Copy Delete	Moreira
Edit Copy Delete	Gustafsson
Edit Copy Delete	Bourrier
Edit Copy Delete	Bondi
Edit Copy Delete	Soisalon-Soininen
Edit Copy Delete	Arias
Edit Copy Delete	Murata
Edit Copy Delete	Tung
Edit Copy Delete	Luo
Edit Copy Delete	Romero
Edit Copy Delete	Lent
Edit Copy Delete	Sarkar
Edit Copy Delete	Shuming
Edit Copy Delete	Bancilhon
Edit Copy Delete	Dusserre
Edit Copy Delete	Desyl
Edit Copy Delete	Jaekel

7. Find the advisor of the student with ID 12345

```
SELECT i.name FROM advisor a JOIN instructor i ON a.i_ID = i.ID WHERE a.s_ID
= '12345';
```

8. Find the average salary of all instructors.

```
SELECT AVG(salary) AS avg_salary FROM instructor;
```

avg_salary
77600.188200

9. Find the names of all departments whose building name includes the substring 'Watson'.

```
SELECT dept_name FROM department WHERE building LIKE '%Watson%';
```

10. Find the names of instructors with salary amounts between $90,000 and $100,000.

```
SELECT name FROM instructor WHERE salary BETWEEN 90000 AND 100000;
```

←T→				name
☐	Edit	Copy	Delete	Yazdi
☐	Edit	Copy	Delete	Liley
☐	Edit	Copy	Delete	McKinnon
☐	Edit	Copy	Delete	Sullivan
☐	Edit	Copy	Delete	Mahmoud
☐	Edit	Copy	Delete	Dale

11. Find the instructor names and the courses they taught for all instructors in the Biology department who have taught some course.

```
SELECT i.name, t.course_id FROM instructor i JOIN teaches t ON i.ID = t.ID
WHERE i.dept_name = 'Biology';
```

name	course_id
Queiroz	559
Valtchev	415
Valtchev	702

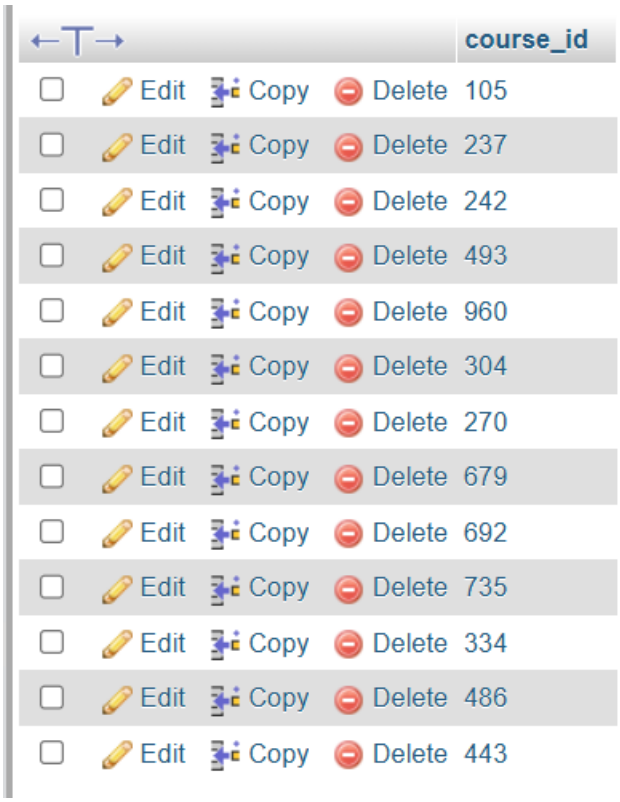
12. Find the courses taught in Fall-2009 semester.

```
SELECT DISTINCT course_id FROM section WHERE semester = 'Fall' AND year = 2009;
```

←T→				course_id
☐	Edit	Copy	Delete	105
☐	Edit	Copy	Delete	237
☐	Edit	Copy	Delete	242
☐	Edit	Copy	Delete	960
☐	Edit	Copy	Delete	304
☐	Edit	Copy	Delete	334
☐	Edit	Copy	Delete	486

13. Find the set of all courses taught either in Fall-2009 or in Spring-2010.

```
SELECT DISTINCT course_id FROM section WHERE (semester = 'Fall' AND year = 2009) OR (semester = 'Spring' AND year = 2010);
```



	course_id
Edit Copy Delete	105
Edit Copy Delete	237
Edit Copy Delete	242
Edit Copy Delete	493
Edit Copy Delete	960
Edit Copy Delete	304
Edit Copy Delete	270
Edit Copy Delete	679
Edit Copy Delete	692
Edit Copy Delete	735
Edit Copy Delete	334
Edit Copy Delete	486
Edit Copy Delete	443

14. Find the set of all courses taught in the Fall-2009 as well as in Spring-2010.

```
SELECT DISTINCT s1.course_id FROM section s1 JOIN section s2 ON s1.course_id = s2.course_id WHERE s1.semester = 'Fall' AND s1.year = 2009 AND s2.semester = 'Spring' AND s2.year = 2010;
```

15. Find all courses taught in the Fall-2009 semester but not in the Spring-2010 semester.

```
SELECT DISTINCT course_id FROM section WHERE semester = 'Fall' AND year = 2009 AND course_id NOT IN (SELECT course_id FROM section WHERE semester = 'Spring' AND year = 2010);
```

←T→	course_id
Edit Copy Delete	105
Edit Copy Delete	237
Edit Copy Delete	242
Edit Copy Delete	960
Edit Copy Delete	304
Edit Copy Delete	334
Edit Copy Delete	486

16. Find all instructors who appear in the instructor relation with null values for salary.

```
SELECT name FROM instructor WHERE salary IS NULL;
```

17. Find the average salary of instructors in the Finance department.

```
SELECT AVG(salary) FROM instructor WHERE dept_name = 'Finance';
```

AVG(salary)
105311.380000

18. Find the total number of instructors who teach a course in the Spring-2010 semester.

```
SELECT COUNT(DISTINCT ID) FROM teaches WHERE semester = 'Spring' AND year = 2
010;
```

COUNT(DISTINCT ID)
5

19. Find the average salary in each department.

```
SELECT dept_name, AVG(salary) AS avg_salary FROM instructor GROUP BY dept_nam
e;
```

←T→	dept_name	avg_salary
Edit Copy Delete	Accounting	48716.592500
Edit Copy Delete	Astronomy	79070.080000
Edit Copy Delete	Athletics	77098.198000
Edit Copy Delete	Biology	61287.250000
Edit Copy Delete	Comp. Sci.	98133.470000
Edit Copy Delete	Cybernetics	96346.567500
Edit Copy Delete	Elec. Eng.	74162.740000
Edit Copy Delete	English	72089.050000
Edit Copy Delete	Finance	105311.380000
Edit Copy Delete	Geology	99382.590000
Edit Copy Delete	Languages	57421.856667
Edit Copy Delete	Marketing	84097.437500
Edit Copy Delete	Mech. Eng.	79813.020000
Edit Copy Delete	Physics	114576.900000
Edit Copy Delete	Pol. Sci.	100053.073333
Edit Copy Delete	Psychology	61143.050000
Edit Copy Delete	Statistics	67795.441667

20. Find the number of instructors in each department who teach a course in the Spring-2010 semester.

```
SELECT i.dept_name, COUNT(DISTINCT t.ID) AS num_instructors FROM instructor i
 JOIN teaches t ON i.ID = t.ID WHERE t.semester = 'Spring' AND t.year = 2010
GROUP BY i.dept_name;
```

dept_name	num_instructors
Athletics	1
English	2
Geology	1
Physics	1

21. List out the departments where the average salary of the instructors is more than $42,000.

```
SELECT dept_name FROM instructor GROUP BY dept_name HAVING AVG(salary) > 4200
0;
```

←T→	dept_name
Edit Copy Delete	Accounting
Edit Copy Delete	Astronomy
Edit Copy Delete	Athletics
Edit Copy Delete	Biology
Edit Copy Delete	Comp. Sci.
Edit Copy Delete	Cybernetics
Edit Copy Delete	Elec. Eng.
Edit Copy Delete	English
Edit Copy Delete	Finance
Edit Copy Delete	Geology
Edit Copy Delete	Languages
Edit Copy Delete	Marketing
Edit Copy Delete	Mech. Eng.
Edit Copy Delete	Physics
Edit Copy Delete	Pol. Sci.
Edit Copy Delete	Psychology
Edit Copy Delete	Statistics

22. For each course section offered in 2009, find the average total credits (tot cred) of all students enrolled in the section, if the section had at least 2 students.

```
SELECT t.course_id, t.sec_id, t.semester, t.year, AVG(s.tot_cred) AS avg_tot_
cred FROM takes t JOIN student s ON t.ID = s.ID WHERE t.year = 2009 GROUP BY
t.course_id, t.sec_id, t.semester, t.year HAVING COUNT(t.ID) >= 2;
```

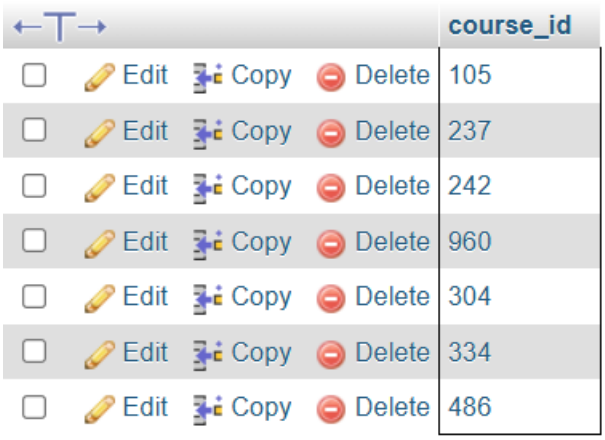
course_id	sec_id	semester	year	avg_tot_cred
105	1	Fall	2009	68.3578
237	2	Fall	2009	65.6656
242	1	Fall	2009	64.4576
304	1	Fall	2009	64.9023
334	1	Fall	2009	62.8806
486	1	Fall	2009	64.8980
604	1	Spring	2009	65.7233
960	1	Fall	2009	66.0847
972	1	Spring	2009	65.2607

23. Find all the courses taught in both the Fall-2009 and Spring-2010 semesters.

```
SELECT DISTINCT s1.course_id FROM section s1 JOIN section s2 ON s1.course_id
= s2.course_id WHERE s1.semester = 'Fall' AND s1.year = 2009 AND s2.semester
= 'Spring' AND s2.year = 2010;
```

24. Find all the courses taught in the Fall-2009 semester but not in the Spring-2010 semester.

```
SELECT DISTINCT course_id FROM section WHERE semester = 'Fall' AND year = 200
9 AND course_id NOT IN (SELECT course_id FROM section WHERE semester = 'Sprin
g' AND year = 2010)
```



←T→				course_id
☐	Edit	Copy	Delete	105
☐	Edit	Copy	Delete	237
☐	Edit	Copy	Delete	242
☐	Edit	Copy	Delete	960
☐	Edit	Copy	Delete	304
☐	Edit	Copy	Delete	334
☐	Edit	Copy	Delete	486

25. Select the names of instructors whose names are neither "Mozart" nor "Einstein".

```
SELECT name FROM instructor WHERE name NOT IN ('Mozart', 'Einstein');
```

←T→				name
☐	Edit	Copy	Delete	Bawa
☐	Edit	Copy	Delete	Yazdi
☐	Edit	Copy	Delete	Wieland
☐	Edit	Copy	Delete	DAgostino
☐	Edit	Copy	Delete	Liley
☐	Edit	Copy	Delete	Kean
☐	Edit	Copy	Delete	Atanassov
☐	Edit	Copy	Delete	Moreira
☐	Edit	Copy	Delete	Gustafsson
☐	Edit	Copy	Delete	Bourrier
☐	Edit	Copy	Delete	Bondi
☐	Edit	Copy	Delete	Soisalon-Soininen
☐	Edit	Copy	Delete	Morris
☐	Edit	Copy	Delete	Arias
☐	Edit	Copy	Delete	Murata
☐	Edit	Copy	Delete	Tung
☐	Edit	Copy	Delete	Luo
☐	Edit	Copy	Delete	Vicentino
☐	Edit	Copy	Delete	Romero
☐	Edit	Copy	Delete	Lent
☐	Edit	Copy	Delete	Sarkar
☐	Edit	Copy	Delete	Shuming

26. Find the total number of (distinct) students who have taken course sections taught by the instructor with ID 110011.

```
SELECT COUNT(DISTINCT t.ID) FROM takes t JOIN teaches te ON t.course_id = te.course_id AND t.sec_id = te.sec_id AND t.semester = te.semester AND t.year = te.year WHERE te.ID = '110011';
```

COUNT(DISTINCT t.ID)
0

27. Find the ID and names of all instructors whose salary is greater than at least one instructor in the History department.

```
SELECT DISTINCT i1.ID, i1.name FROM instructor i1 WHERE i1.salary > (SELECT M
IN(i2.salary) FROM instructor i2 WHERE i2.dept_name = 'History');
```

28. Find the names of all instructors that have a salary value greater than that of each instructor in the Biology department.

```
SELECT name FROM instructor WHERE salary > ALL (SELECT salary FROM instructor
 WHERE dept_name = 'Biology');
```

←T→	name
Edit Copy Delete	Yazdi
Edit Copy Delete	Wieland
Edit Copy Delete	Liley
Edit Copy Delete	Atanassov
Edit Copy Delete	Gustafsson
Edit Copy Delete	Bourrier
Edit Copy Delete	Bondi
Edit Copy Delete	Arias
Edit Copy Delete	Luo
Edit Copy Delete	Romero
Edit Copy Delete	Lent
Edit Copy Delete	Sarkar
Edit Copy Delete	Shuming
Edit Copy Delete	Bancilhon
Edit Copy Delete	Jaekel
Edit Copy Delete	McKinnon
Edit Copy Delete	Mingoz
Edit Copy Delete	Pimenta
Edit Copy Delete	Sullivan

29. Find the departments that have the highest average salary.

```
SELECT dept_name FROM instructor GROUP BY dept_name HAVING AVG(salary) = (SEL
ECT MAX(avg_salary) FROM (SELECT AVG(salary) AS avg_salary FROM instructor GR
OUP BY dept_name) AS temp);
```

←T→	dept_name
Edit Copy Delete	Physics

30. Find all courses taught in both the Fall 2009 semester and in the Spring-2010 semester.

```
SELECT DISTINCT s1.course_id FROM section s1 JOIN section s2 ON s1.course_id
= s2.course_id WHERE s1.semester = 'Fall' AND s1.year = 2009 AND s2.semester
= 'Spring' AND s2.year = 2010;
```

31. Find all students who have taken all the courses offered in the Biology department.

```
SELECT ID FROM student WHERE NOT EXISTS ( SELECT course_id FROM course WHERE
dept_name = 'Biology' EXCEPT SELECT course_id FROM takes WHERE student.ID = t
akes.ID );
```

32. Find all courses that were offered at most once in 2009.

```
SELECT course_id FROM section WHERE year = 2009 GROUP BY course_id HAVING COU
NT(*) <= 1;
```

←T→	course_id
Edit Copy Delete	105
Edit Copy Delete	237
Edit Copy Delete	242
Edit Copy Delete	304
Edit Copy Delete	334
Edit Copy Delete	486
Edit Copy Delete	604
Edit Copy Delete	960
Edit Copy Delete	972

33. Find all courses that were offered at least twice in 2009.

```
SELECT course_id FROM section WHERE year = 2009 GROUP BY course_id HAVING COU
NT(*) >= 2;
```

34. Find the average instructors' salaries of those departments where the average salary is greater than $42,000.

```
SELECT dept_name, AVG(salary) FROM instructor GROUP BY dept_name HAVING AVG(s
alary) > 42000;
```

	dept_name	AVG(salary)
Edit Copy Delete	Accounting	48716.592500
Edit Copy Delete	Astronomy	79070.080000
Edit Copy Delete	Athletics	77098.198000
Edit Copy Delete	Biology	61287.250000
Edit Copy Delete	Comp. Sci.	98133.470000
Edit Copy Delete	Cybernetics	96346.567500
Edit Copy Delete	Elec. Eng.	74162.740000
Edit Copy Delete	English	72089.050000
Edit Copy Delete	Finance	105311.380000
Edit Copy Delete	Geology	99382.590000
Edit Copy Delete	Languages	57421.856667
Edit Copy Delete	Marketing	84097.437500
Edit Copy Delete	Mech. Eng.	79813.020000
Edit Copy Delete	Physics	114576.900000
Edit Copy Delete	Pol. Sci.	100053.073333
Edit Copy Delete	Psychology	61143.050000
Edit Copy Delete	Statistics	67795.441667

35. Find the maximum across all departments of the total salary at each department.

```
SELECT MAX(total_salary) FROM (SELECT dept_name, SUM(salary) AS total_salary
FROM instructor GROUP BY dept_name) AS dept_salaries;
```

MAX(total_salary)
406772.65

36. List all departments along with the number of instructors in each department.

```
SELECT dept_name, COUNT(ID) FROM instructor GROUP BY dept_name;
```

dept_name	COUNT(ID)
Accounting	4
Astronomy	1
Athletics	5
Biology	2
Comp. Sci.	2
Cybernetics	4
Elec. Eng.	4
English	4
Finance	1
Geology	1
Languages	3
Marketing	4
Mech. Eng.	2
Physics	2
Pol. Sci.	3
Psychology	2
Statistics	6