Correspondence and Adequacy between Skills Acquired and Workload in Comparison with Professional Requirements

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The reason why …

we launched three years ago this study was do to:

Short term targets

- **Shift to Innovative medicines**
- **U is ready to answer the request of train for a pharmacy of SERVICES (Law 81/10)**
- Optimize access-tutoring to equalize students with a different scholastic background (the best students leave to go to Medicine in the 2° year)
- Train tutors in a proper way
- Define Tutors task and U Counselling Tasks
- Identify Average Student
- Integrate Dublin Descriptors and LOs in Teaching Methodology and Curriculum Design

Long term targets

- **Identify and force professors to respect the corresponce between WL and assigned Credits**
- **Align LOs with Assessment and Professional needs**
- **Be able to introduce new modules to parallel evolution of the profession and changes in the national HS**

Workload - Italy

For all curricula, WL is the time the student spend on directed and private study, assessment and lectures and tutorial. It also includes travelling to the university and related issues for a total of **1.500 hours per year corresponding to 60 Credits – (5ye-onecycle)**

Clausus Number: Medicine, Pharmacy

Students enter Pharmacy after a written MCT (Natural Sciences and Biology) – Debits – Tutoring

Time required for Learning

- A too tight schedule results in student **overload** and/or superficial learning
- The student who superficially learns more likely feels the course overloaded
- **First year modules frequently require basic scientific knowledges increasing the feeling of overloading**

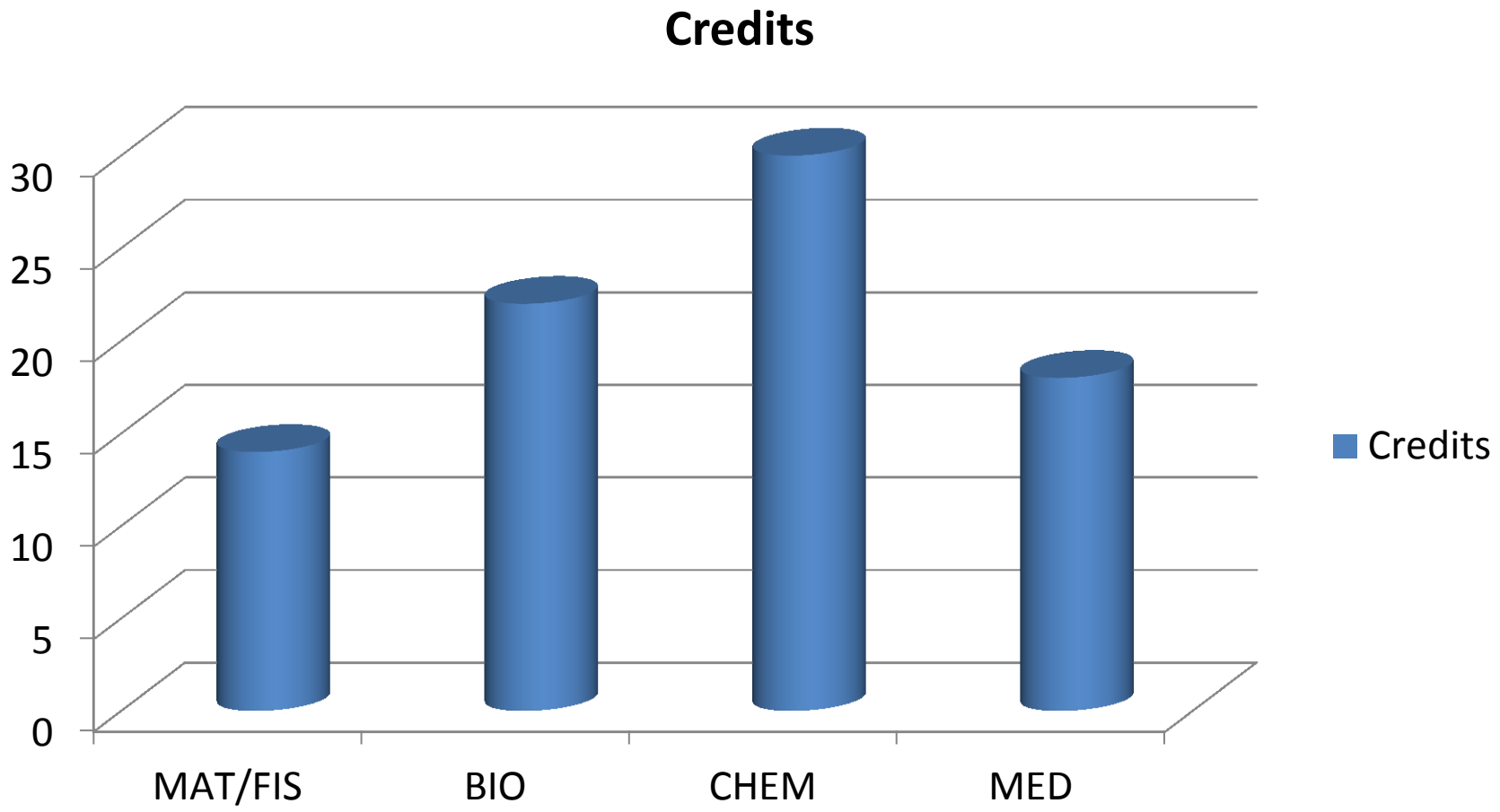
Consequences of overloading

- **The student learns only the minimum required to pass the exam**
- **The student does not spend time to differentiate items professionally relevant from irrelevant**
- External factors, such as learning environment (library, home, dorms, and so on), learning history and situation in life affect the experience
- **Rote learning instead of a rational learning represents additional (wasted) time.**

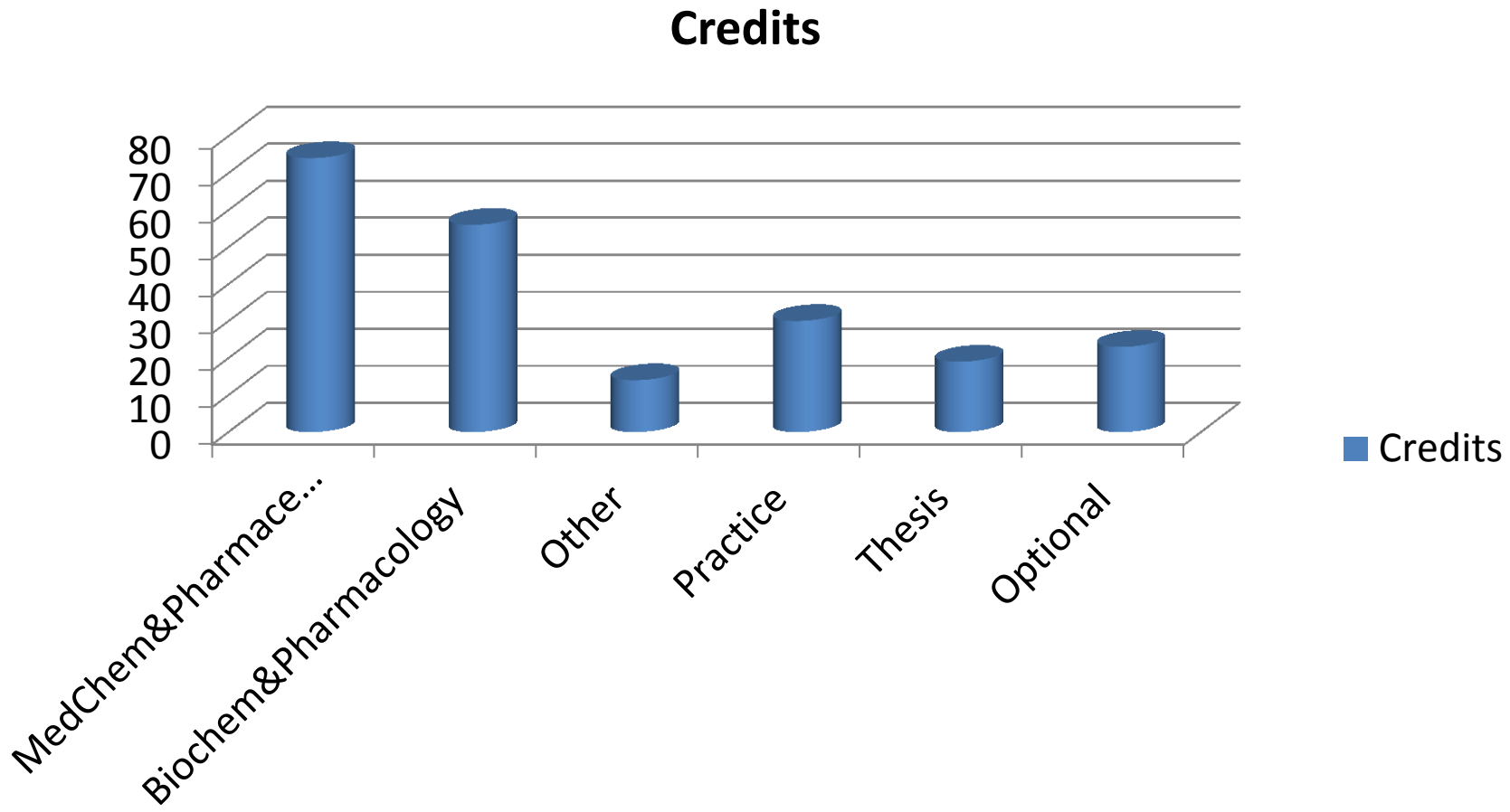
Problems (general)

- The students exchange information (sometime uncorrect!) passing them from a generation to the other
- A too standardised exam procedure enable students to identify the minimum essential workload (MEW) to pass the exam
- The MEW is not enough for a deeper advanced learning
- Most of students have difficulties in allocating week time to different tasks

The System - Basic Sciences



Professional Sciences



Some results

1st Ye Student (MAT=9Cr.)

	Av	Resid	Non	Low	High-skilled
Sat/Sun	7.7h	6.3h	9.1h	6h	8.5h
Hr x Exam				175h	200h
Hr/d(in-semester)				3.9h	3.1h
In-group				33%	33%

2nd Ye Student (OrgCh=6Cr.)

	Av	Low	High
Sat/Sun	5.6h↓	5.5h↓	7.5h↓
Hr x Exam		31h	53h
Hr(in-semester)		3.3h↓	2.0h↓
In-group		20%↓↓	20%↓↓

4th Ye Student (MedCh=12Cr.)

	Av	Low	High
Sat/Sun	8.2h↑↑	8.2h ↑↑	7.5h
hr x Exam	150h	137h	170h
hr(in-semester)		4.3h↑↑	4.4h ↑↑
In-group		30%	30%

Workload/Module

	Stud(h)/**cr#**	Theoretical(h)
• **Biology**	34/3	54
• **Chemistry**	184/10	180
• **Microbiology**	119/5	90
• **AnalChem**	66/5	90
• **OrgChem**	34/6	108
• **Pharmacognosy**	46/5	90
• **NutritPhysiol**	95/5	90
• **MedChem**	150/12	216
• **Pharmacol (adv.)***	**150**/4	72
• **PharmTechnol**	113/11	130
• **Toxicology***	**150**/10	180

*same professor!!!

Workload/Module (labs)

	Stud(h)/cr#	Theoretical(h)
• **1st ye lab**	82/6	58.5
• **2nd ye lab A**	**93/6**	**58.5**
• **3rd ye lab A**	**83/4**	**52**
• **3rd ye lab B**	**254/8**	**85**

3rd ye labs are professional labs (Pharmaceutics and Drug, Food and Toxicological Analysis)

Average Student Definition

- Average Student vs Characteristic of the Majority of Students
- 90% of Students just takes notes and is too shy to ask questions during class teaching
- 90% of Students have a different approach towards professional modules vs basic disciplines
- **90% of Students have a different approach toward disciplines related with the particular professional role he/she has in mind: i.e. community pharmacy vs. research activity vs. hospital paharmacy vs. cosmetics vs. pharmaceutics vs. nutraceutics vs. food and nutrition and so on**

Interpreting student's perceptions

- **Questionnaire *per* Module** *vs.* Comprehensive Individual set of Interviews
- **Stakeholders and Graduate Questionnaire**

School and Personal

- Type-of-School Background
- School Final Vote
- School Ranking
- Age
- Gender
- Being in schedule or not
- % of lecture/class attended

Logistic

- Living in City or not
- Car *vs.* Public Transportation *vs.* Car sharing
- Living at 15’-60’ minutes from the University Campus
- Living Alone/Home/University Dorms/Sharing Apartment with other students/Other
- Classroom evaluation

Modules Evaluation

(Students, stakeholders/Older students and graduated)

- Level of satisfaction (in general)
- Evaluation of scheduling of teaching activities
- Integration/superimposition among modules
- Relevance of Thought Issues/Innovation
- Clearness of Assessment
- Teaching Material
- TM availability
- Link practical activities/theory
- Learning activities Alignment with exam
- Teaching evaluation
- Module alignment with professional activities

Different Independent Studying Locations
(non-U Learning Environment)

- Home
- Alone
- Group of students
- Dorm

Learning Environment (U)

- Equipments
- Libraries
- ICT, PC

Perception/Emotional

- Are Classes clean?
- Well equipped?
- Faculty web site is friendly?
- Up-dated frequently/continuously?
- Do you plan to graduate on schedule?
- How much time you waste for curricular dis-organisations?

Studying a single module

- Hours studying during working days (h/day)
- Hours studying during w-e
- Hours studying during summer/mid-term vacation
- Studying ratio home/library
- Hours studying in total to pass exam
- Hours studying in total to pass exam (older students info)
- Time to reach the campus each day (car, walking, bus)
- Studying in group or independently

Basic vs. Professional Modules

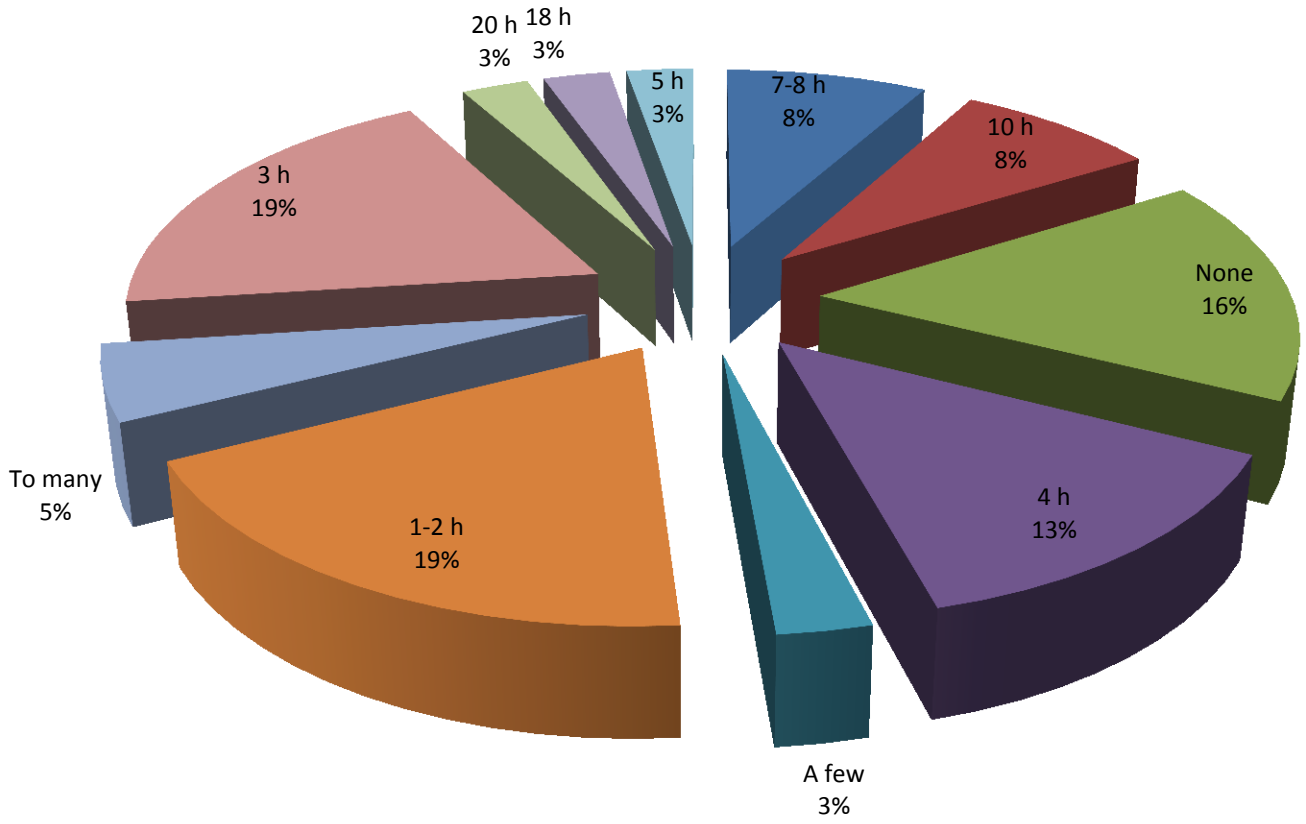
Disciplines

- Chemistry vs Biology
- Legislation vs. Clinical/Pharmacology
- Practical vs. Teoretical Modules
- First year classes vs forth/fifth year Classes
- Thesis vs Pharmacy Practice
- First semester vs Second Semester perception
- Gender and Age

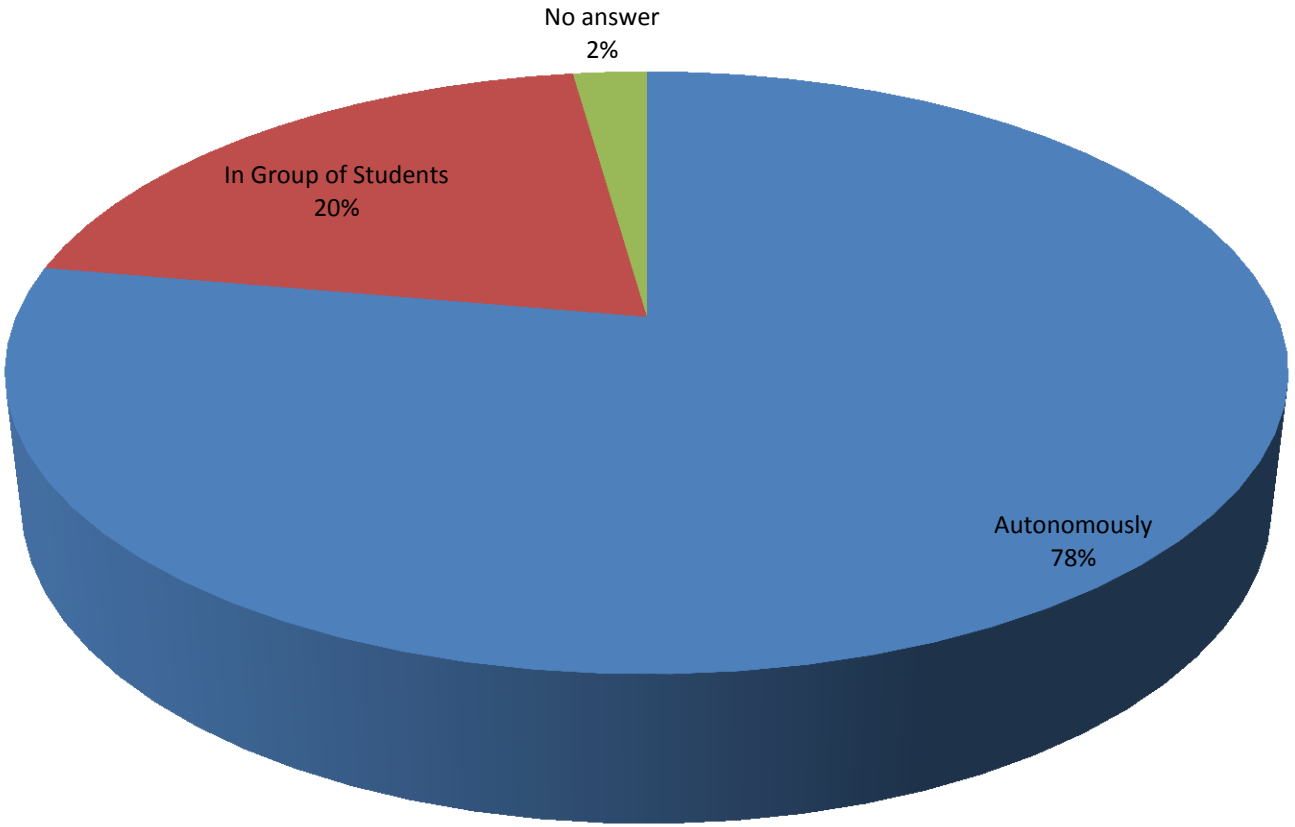
Professional Requirements

- Italian Accreditation Procedure
- Class of Degree (one-cycle-five-years-degree)

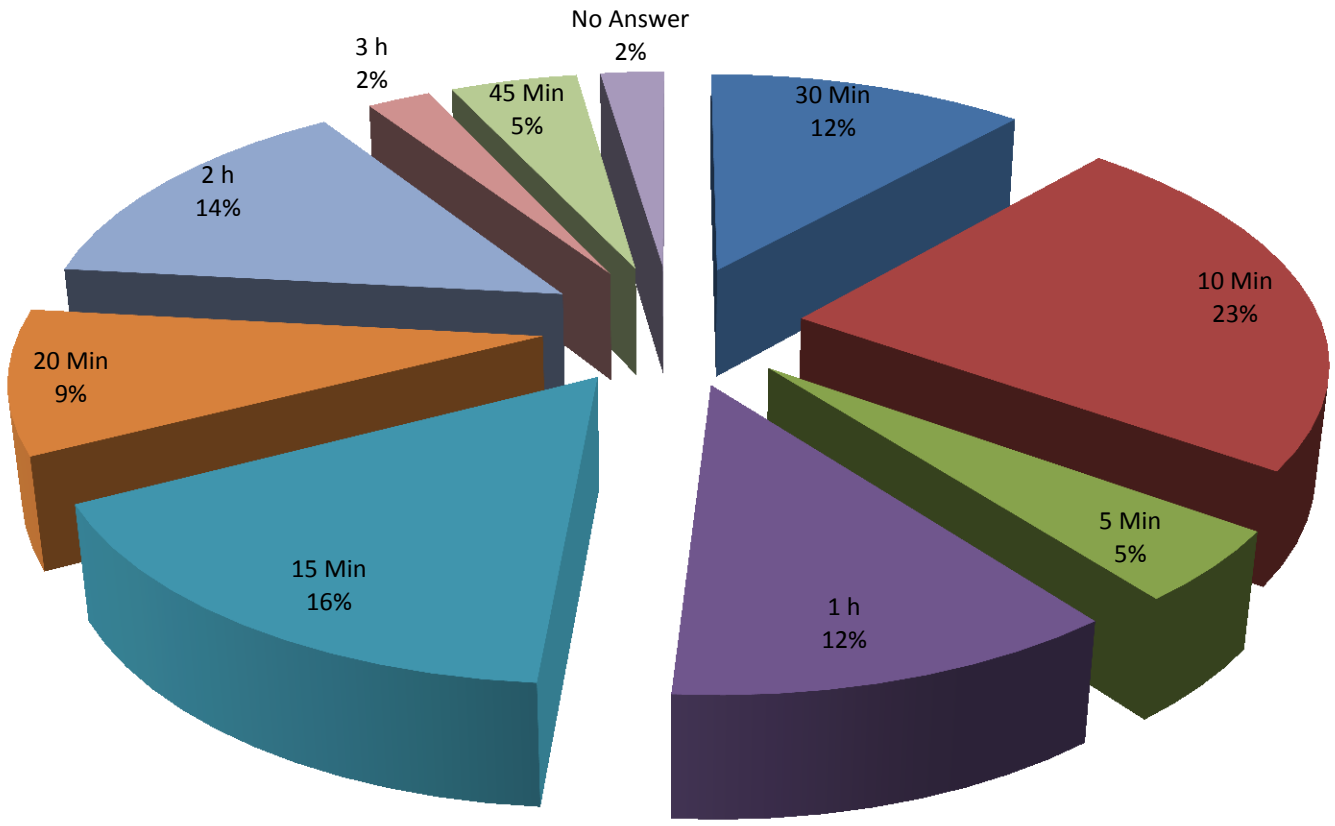
Hours lost between Classes



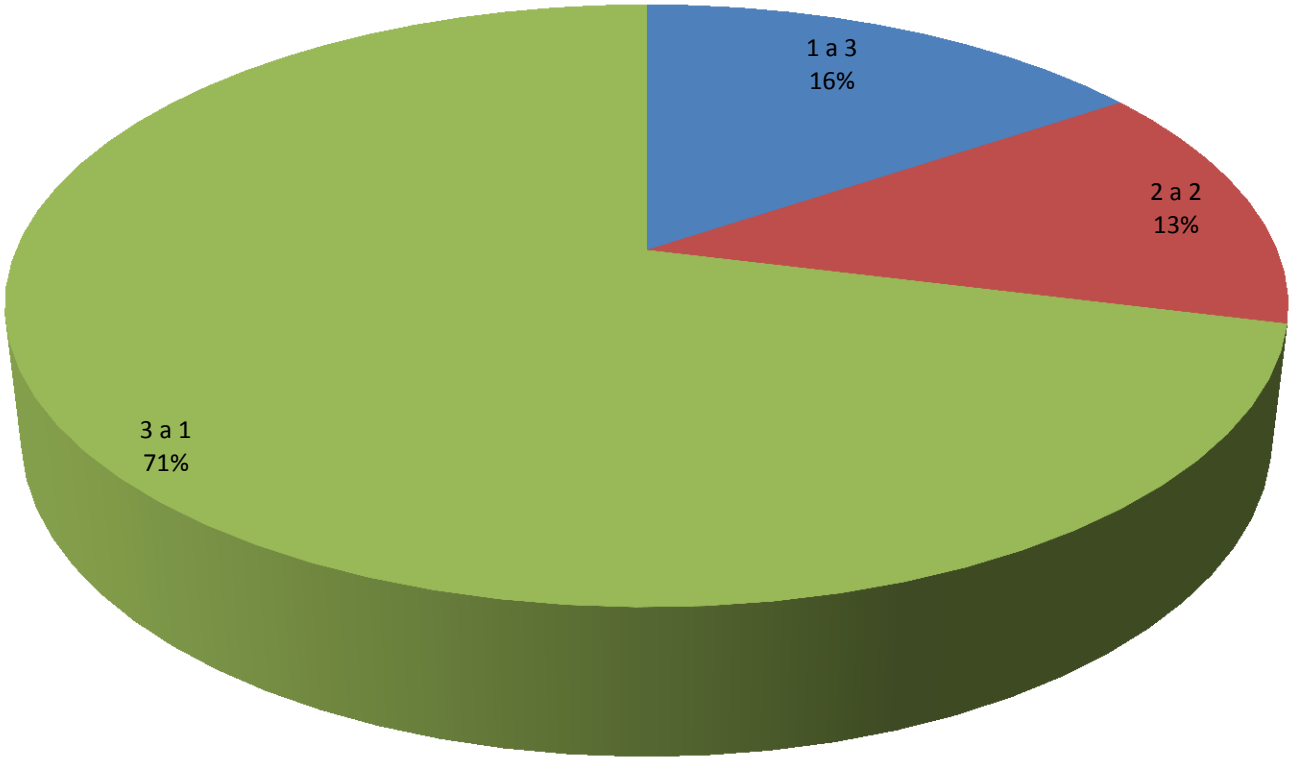
Mode of Studying



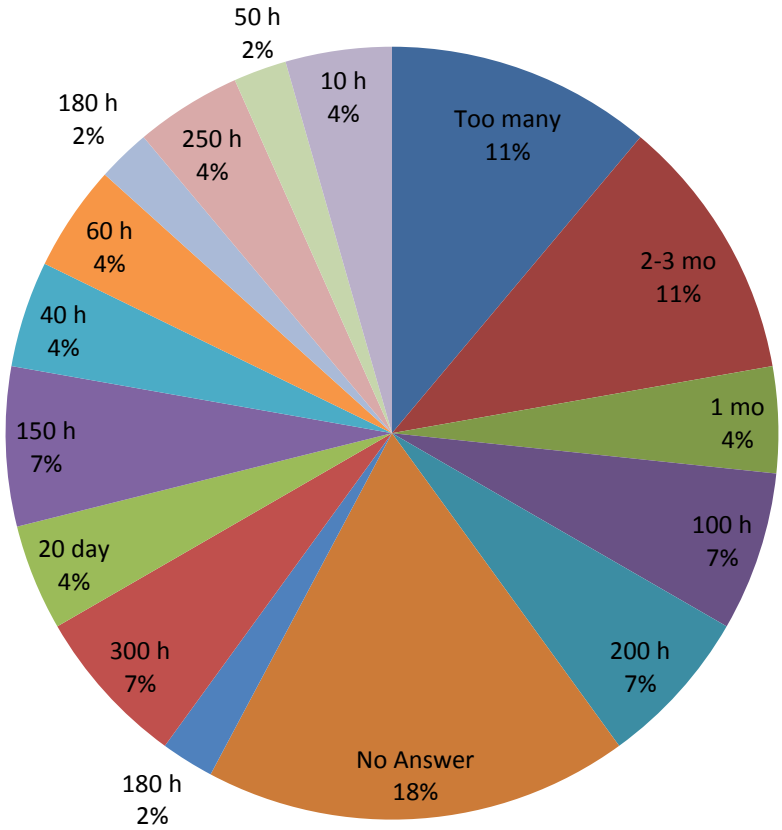
Time Required to reach U (daily)



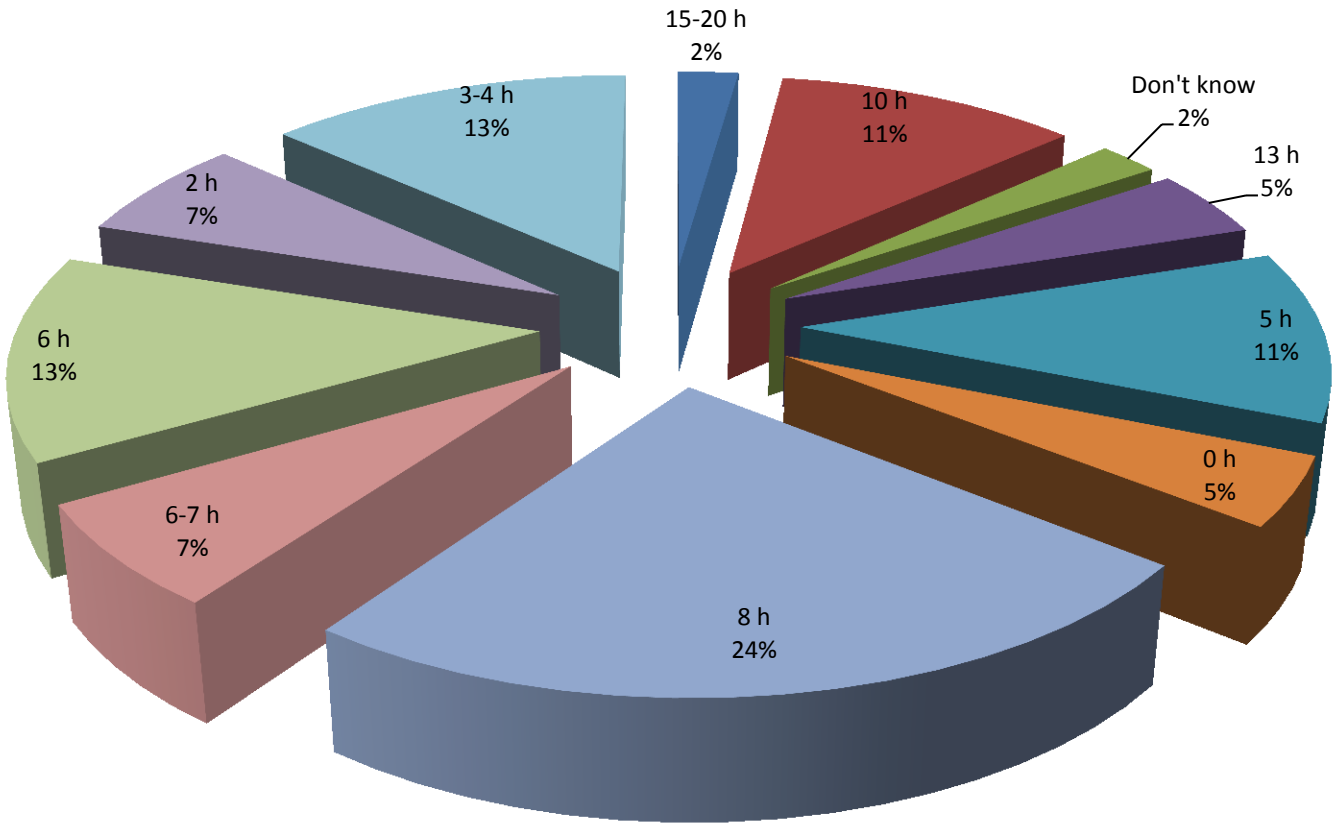
Home vs. U Library Studying



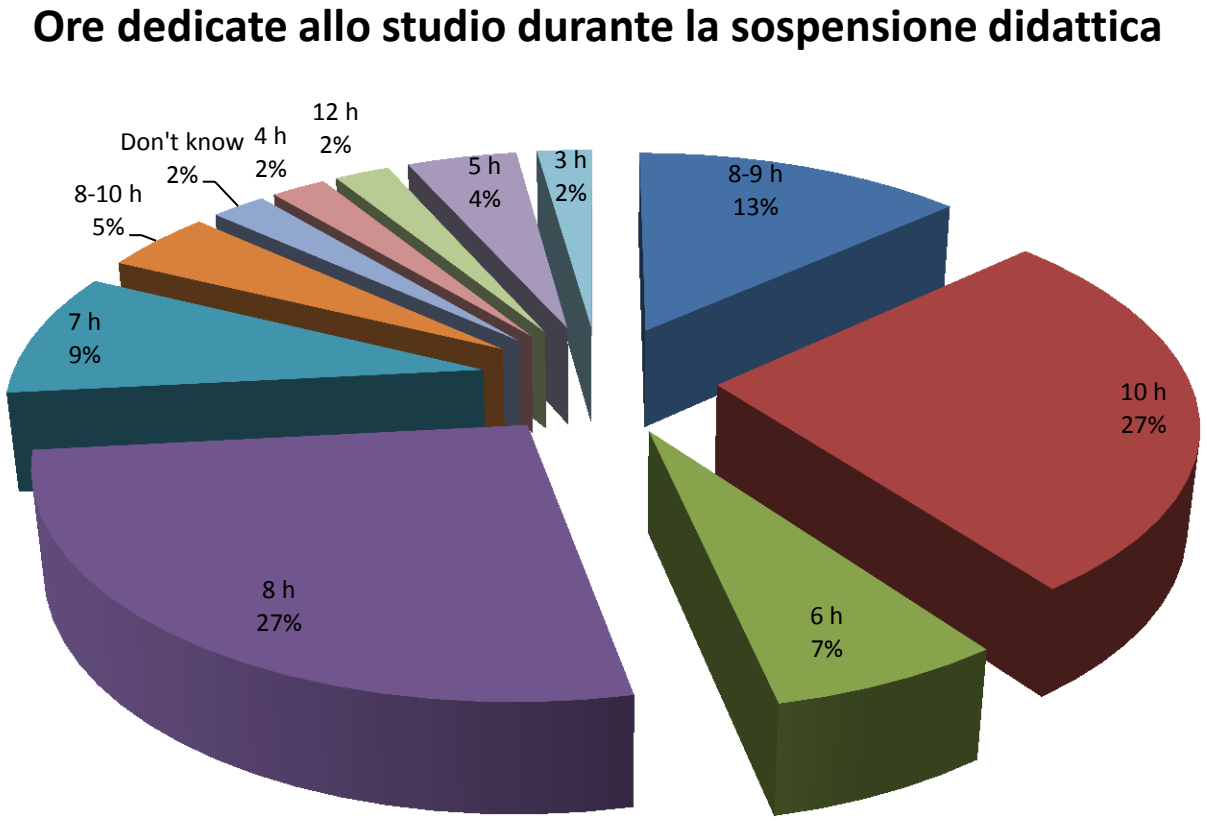
Total Time (h) Studying to Pass the Exam



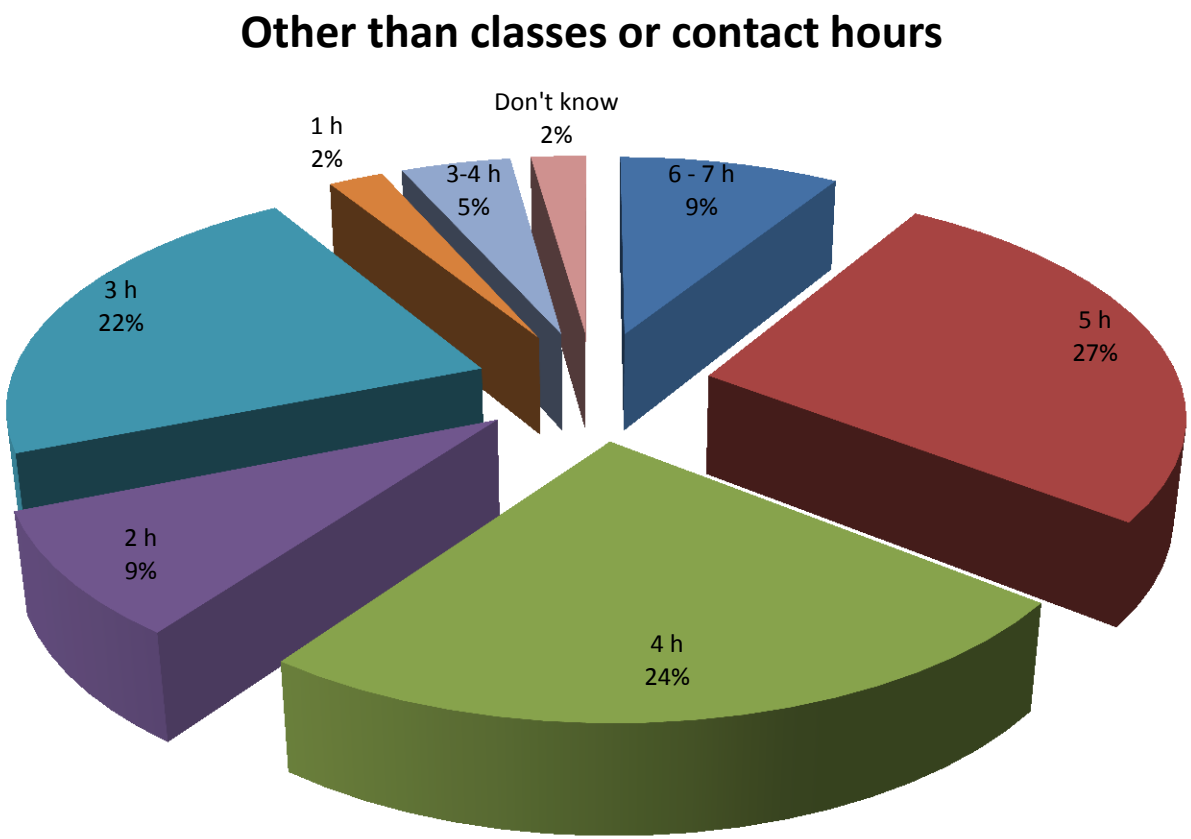
Time (h) spent studying during W-Es



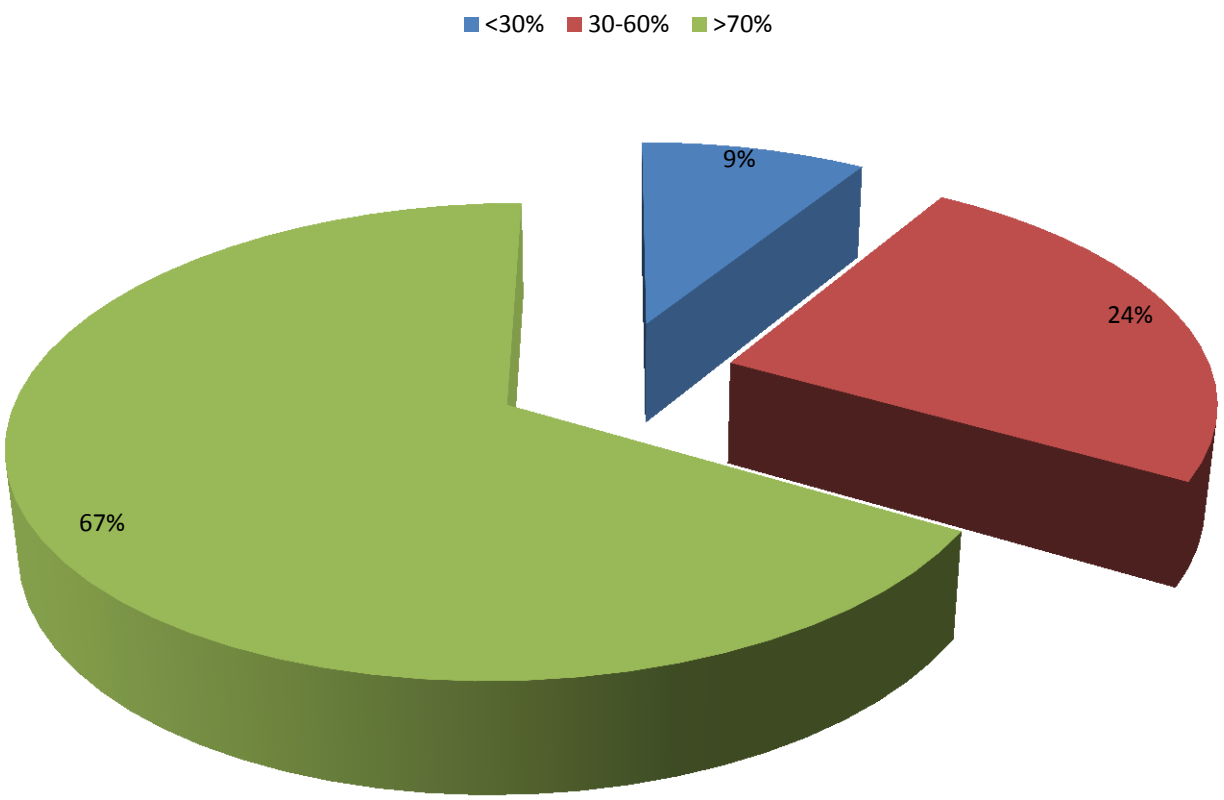
Time (h) studying between following Semesters



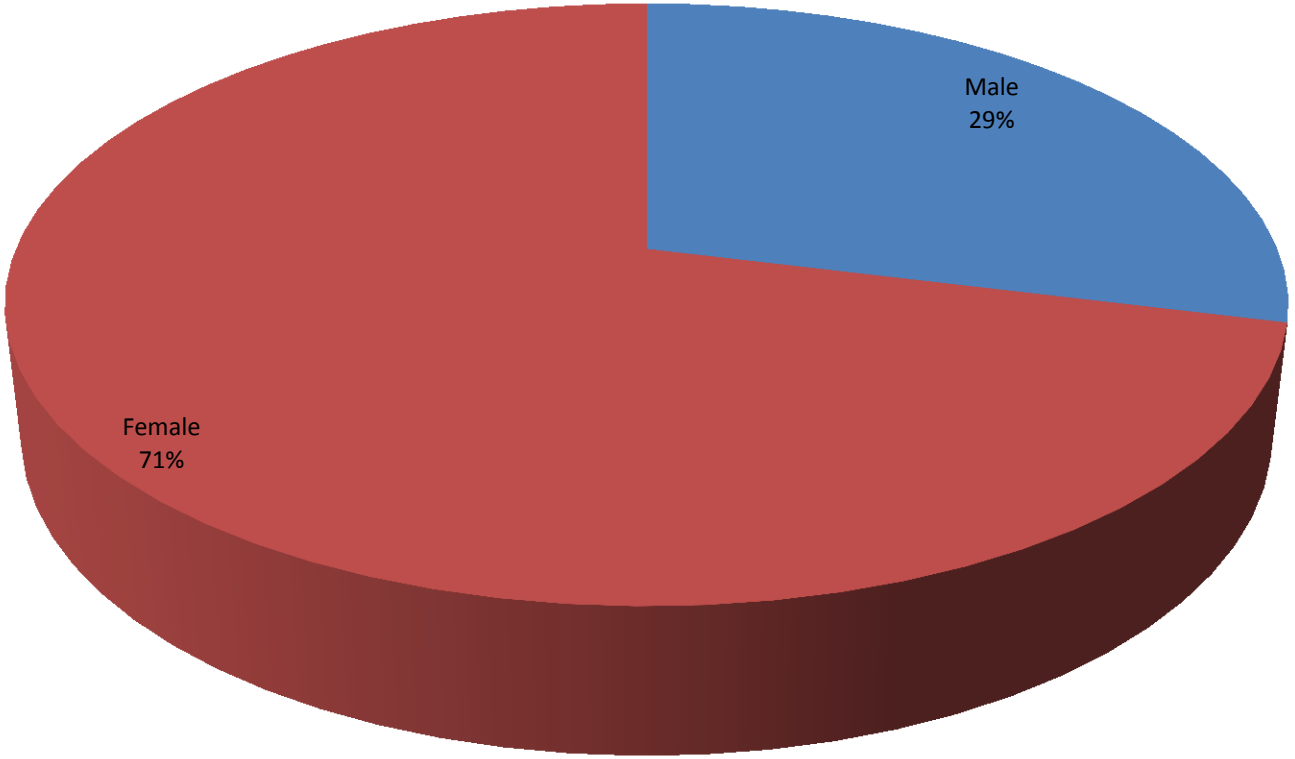
Daily Time (h) Studying



Classes Attended (%)

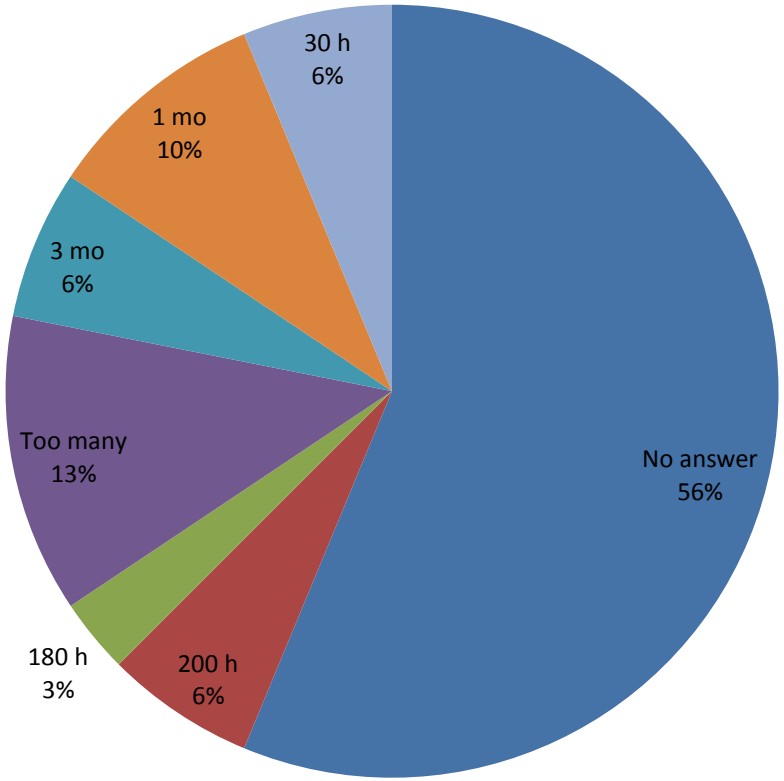


Gender (IV year)

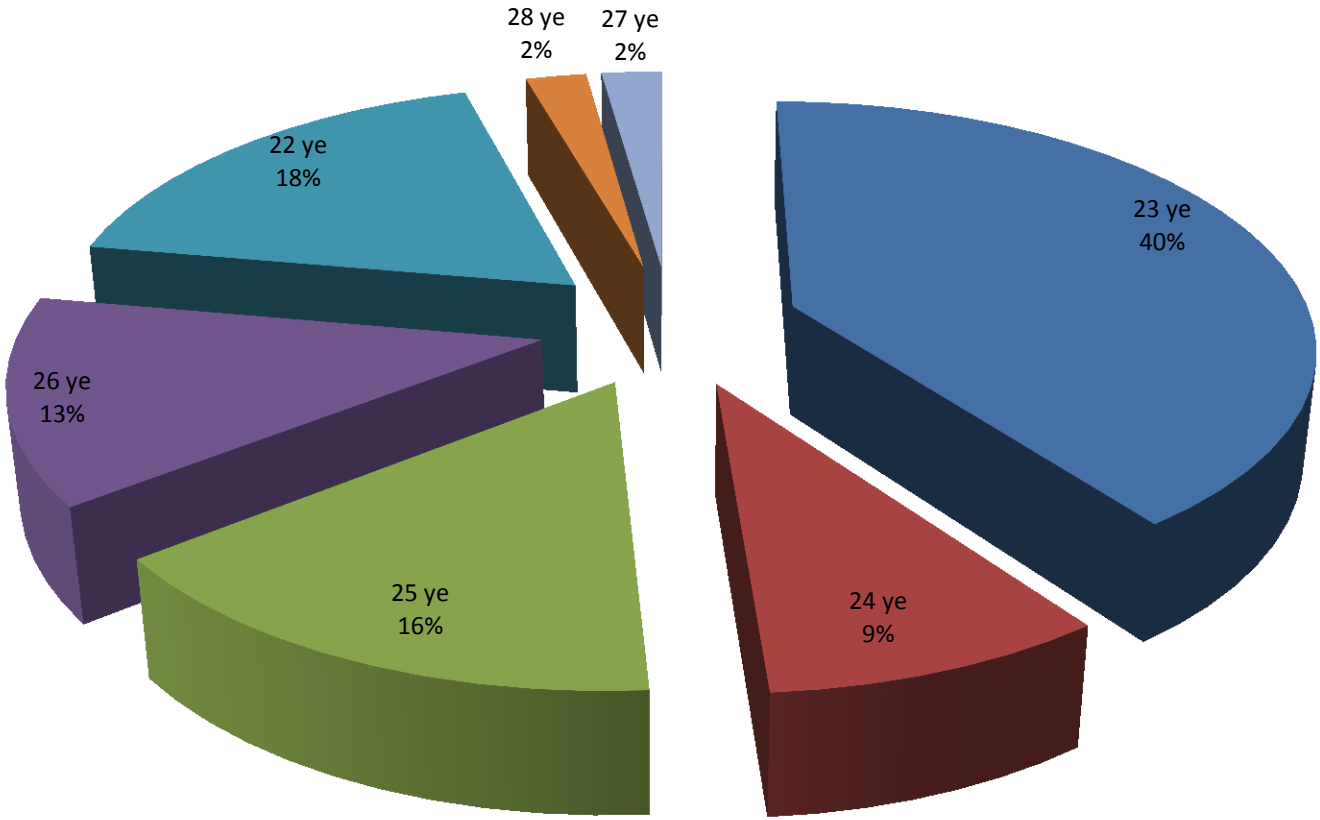


Total Time (h) Studying to Pass the Exam

(info get from older students)



Age (example)



Conclusions (1/3)

- **Reduced flexibility of the Curriculum**
- **Good Interdisciplinarity in professional modules**
- **Reduced possibility to run integrated teaching**
- **Good student capability to integrate discipline based teaching**
- Students with Higher Scholastic Skills study more and better. They soon realize how much time is required to study to pass each exam
- **Most of the students work much more than 1500 h/y**
- There is no incidence on results between students living in the city and students travelling to the city each day
- **Despite different scholastic background, there is no difference in perceived WL for modules of different scientific areas**
- Few students in percentage (<20%) study in group. They have in general few opportunities to take advantage in working in team

Conclusions (2/3)

- **Few modules are thought taking in account of different learning methodologies**
- **There are no students preferring chemical disciplines vs. biological or *viceversa***
- Professors who strikingly do not respect the correspondence are of professional disciplines, in both practical and theoretical modules. They claim there disciplines would require more credits
- Professors of both the Chemical and the Biological areas generally respect the correspondence between credits and WL
- **There is a strong need of change in curriculum required by employers especially toward a more Clinically oriented approach and to prepare for a Pharmacy of Services linked strongly interconnected in the NHS**
- **Graduated (students-type A) are very satisfied of their university studies**
- **There is a strong request by students to better organize scheduling of modules in order to avoid wasting time between different duties**
- **Practice and thesis are very well accepted. Most of the students still require more time for the thesis to have more opportunities to be trained to Research before PhD**

Conclusions (3/3)

- **Professional PhD is strongly requested by employers**
- **Despite students have a lab on Biotechnological Drugs, Innovative Medicines in general have not enough relevance in Curriculum**
- **A better definition/alignment between teaching and assessing is required (LOs should be soon introduced)**
- **The training is to strongly oriented toward the Profession of Pharmacist.** The Italian law attributes to the graduate in Pharmacy more tasks and more diversified working opportunities
- **Tutoring** (supporting students with insufficient knowledge when enrolling and students who go out-of-schedule for personal reasons) **is very well accepted and rewarding**
- Creation of an Alumni Association to support graduated in the profession (CPD and LLL) is strongly required by students, professors and employers

Thanks

- To the Students and in particular to **Salvatore Romano** who helped me in creating a fantastic and friendly Database