

(Exhibit 1.3.F)

King Fahd University of Petroleum & Minerals
Information and Computer Science Department

REPORT OF THE ICS ADHOC COMMITTEE
ON
LOW STUDENT ENROLLMENT
IN THE
INFORMATION & COMPUTER SCIENCE DEPARTMENT

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I. INTRODUCTION

Recently the Information & Computer Science Department has experienced a drop in the undergraduate enrollment. The Chairman of the department felt that there is a need for studying this phenomenon in more detail. An ad-hoc committee was formed to study this problem and to come up with recommendations to improve the situation.

The objective of the committee is to execute the following tasks:

- 1) Determine the major factors affecting student choice of a major in general and ICS in specific.
- 2) Point out major problems (if any) seen by the ICS students regarding the following:
 - (i) The ICS department as a whole.
 - (ii) The faculty of the ICS department.
 - (iii) ICS courses and curriculum.
- 3) Seek and study students' suggestions to improve the quality of teaching and curriculum.
- 4) Recommend actions to be taken by the department to increase student enrollment, improve the quality of teaching, and suggest changes to the curriculum to satisfy students' needs and the objectives of the ICS department.

The rest of this report is divided mainly into four parts. Study design, results and analysis, conclusions, and recommendations.

II. STUDY DESIGN

The Committee used three approaches to investigate the phenomenon namely: two questionnaires, personal contacts, and analysis.

Since ICS 101 is a service course taken by all engineering students, the committee felt that their opinion reflects the opinion of student body.

Questionnaires

The committee decided to prepare a questionnaire targeting ICS 101 students in the summer of (893). The main objectives of this questionnaire are two fold:

- (i) Finding factors influencing students decision in choosing a major.
- (ii) Determining the level of student knowledge of ICS discipline.

The committee also decided to prepare a second questionnaire to obtain input from ICS students regarding the department as a whole, faculty, courses, labs, etc. We arranged for attaching a copy of the questionnaire with every student's paper during the pre-registration week of the fall semester (901).

Personal Contacts

The committee approached a random number of senior students (about 5) to seek their opinions on various academic issues concerning students. This was necessary to complement the above two questionnaires and to deeply discuss certain issues. The committee also decided to discuss some academic issues with few experienced faculty members to get their views and suggestions.

III. RESULTS AND ANALYSIS

(A) Questionnaire A

The committee received 151 responses from the 151 ICS 101 students. Students are classified by their class as shown in Figure A.1. Freshmen and first semester sophomore students are 81% of the studied sample. Figure A.2 shows also the classification of students by their GPA, 89% of the sample has declared a GPA greater than 2.0.

Figure A.3 shows that 91% of the sample has no knowledge of the ICS discipline. It also shows that only 10% of the sample has not declared their major.

Figure A.4 shows the factors attracting students to ICS. Being a new and hi-tech field is the most declared factor for choosing ICS, matching the desire of students is the second factor.

The third factor is being an interesting field, and the fourth factor is the availability of jobs. Being highly paid discipline comes last.

Figure A.5 shows the factors for not choosing ICS. The desire is the first major factor. The second factor is the lack of knowledge of the discipline. Bad department reputation comes third, and low job opportunities comes as the fourth factor.

Figure A.6 shows the factors influencing students in choosing a major in general. Desire comes as the major factor followed by job opportunities. Academic ability and background of students came as third and fourth, respectively.

We have used SAS statistical package to obtain statistics of the collected data particularly correlation analysis to reveal any associations between the factors. The following observations are found:

- 1) About 10% of the freshmen year students have not chosen a major yet.
- 2) About 65% of those 10% students are of low GPA.
- 3) Almost all students who have not chosen a major lack knowledge of computer discipline. On the other hand, 81% of students who have chosen a major still lack knowledge of computer discipline.

From our analysis of the data, it seems that most students choose their major at the end of the orientation year. This indicates that student knowledge about a major and department reputation play an essential role in affecting student decisions. Also a good number of students take ICS 101 late in their program. Therefore, informing orientation students about the discipline is essential in attracting more students rather than targeting ICS 101 students.

It is also obvious from the questionnaire that personal desire is a major factor in attracting students to a particular major. Obviously, personal desire is a combination of many factors and is subject to change.

B. Questionnaire B.

The Committee received 86 responses from about 200 ICS students. We got almost equal responses across the last three classes of students as shown in Figure B.1. The majority

of responding students are of GPA less than 2.5 (Figure B.2). The ICS program partially meets the expectations of 72% of students (Figure B.4). About 51% of the students are satisfied with their major and do not want to change it (Figure B.5). This finding enforces the point that the majority of students are satisfied with the program. The same finding can be seen in Figure B.6.

About 59% of the students think the ICS curriculum is difficult, and 30% think it is fair (Figure B.7). ICS courses require above average time and effort as seen by 85% of the students (Figure B.8). On the other hand, 93% enjoy the program as shown in Figure B.9. About 96% think that the program will help them in their career (Figure B.10). Although most students think that ICS program is difficult, they still enjoy it.

Nearly 14% of the students think that the cooperation between the department and the students is not adequate, while the rest think it is adequate. However, only 9% think faculty are not cooperative, as shown in Figure B.11 and B.12, respectively. Computational facilities are not adequate in the opinion of 35% of the students (Figure B.13). In terms of the central library utilization, 61% claim using it (Figure B.14). Half of these students find the resources they need (Figure B.15).

Questions related to courses revealed that students face difficulties in the following courses:

Name	Major difficulties
ICS 201	lengthy material
ICS 202	bad text
ICS 203	formal with no obvious applications
ICS 212	bad assembler on the mainframe
ICS 242	bad text and no integration between logic and Prolog
ICS 301	Unix
ICS 311	no obvious value

Few students also reported some difficulties with ICS 352 and ICS 354.

Some students pointed out problems in the curriculum and the department. These points can be summarized as follows:

1. The recommended schedule is not realistic in terms of the number of ICS courses a student should take in one semester. This is more apparent in the senior year. In addition, students have to spend extra time in courses with programming projects.
2. A good number of students feel that few instructors are not qualified to teach some courses. Also several pointed out that some instructors lack the ability to communicate to students and/or draw their attention in classes. Students also feel that instructors that are superior in teaching certain courses should be allowed to continue teaching these courses.
3. Most students think that they are under-graded. They are under the impression that instructors do not have the full freedom in assigning grades. In certain courses, students spend a lot of time in programming projects without proportional return.
4. Some textbooks are not appropriate.
5. Certain labs need to be upgraded, specially the PC and Software Research Labs.
6. The attractive word "engineering" is missing from the department name.
7. Rules and procedures concerning summer training and senior projects are not easily accessible nor stable.
8. Some graders are either not qualified to grade certain courses or do not take grading seriously.

IV. CONCLUSIONS

The problems regarding the curriculum can be classified into two sides:

1. Non-solvable problems which are related to the nature of ICS courses. For example, most ICS courses have programming assignments which are usually time consuming. Obviously, this is an inherent characteristic of ICS courses. Students should be aware of this fact and plan for it.
2. Solvable problems that can be addressed. For example, the heavy load of ICS courses at the senior year should be looked at. In addition, problems related to the courses revealed

by students as shown in Section III. The committee feels that this is a big issue that should be addressed by the curriculum committee.

We feel that students' complaints regarding some faculty members might be related to difficulties they are facing in the curriculum. These difficulties are either related to their low performance or to some problems in the curriculum.

We think that the complaints related to textbooks are due to the dynamic nature of the discipline. Instructors should supplement course with some material from better textbooks until they are able to change a book.

Problems related to the program are minor, but should be addressed. Since ICS 101 is a service course it contributes significantly to the image of the department. Similarly, ICS 201 is important in presenting the ICS discipline to the newly joined students. We feel that there is room for improvement in these two courses. Therefore, special care should be given to them.

Computer facilities are important in satisfying the needs of existing students and attracting new ones. We think that compared to other departments, the ICS department is relatively short in lab facilities. Specifically, the PC Lab is in a very unsatisfactory condition. It contains only first-generation PCs with no adequate printing facilities nor technical support. The Software Research Lab also lacks good printing facilities and has limited access hours. Obviously, good computing facilities contribute to the quality of teaching and research.

Students in general lack knowledge of computer discipline, this is due to the absence of computer-related courses in the high school system in the Kingdom. Computers now are very important tools in virtually every discipline. Introducing an introductory course in basic computing at the orientation level will help in having computer-literate students.

A department which is active in research can attract good M.S. students. This can also contribute to the quality of teaching especially at the graduate level.

V. RECOMMENDATIONS

Based on our analysis and findings, we recommend that the department may follow the following points:

1. Forwarding the program related issues to the curriculum committee for analysis and study to come up with reasonable solutions. Emphasis should be given to ICS 101 and 201.
2. A new course evaluation form should be designed to obtain students' input. This course evaluation should be part of the course file. The curriculum committee should review course files at the end of every semester and monitor the success of every course.
3. The PC and software research labs should be enhanced and have supporting staff. New mainframe terminals and a printer should be placed in building 22 for easier student access.
4. The department should prepare a student guide which contains all the information a student needs to complete the program. It may also include a review of all the computing facilities, rules and procedures of senior projects and summer training, etc. This can also serve as an introduction to the discipline in the career day and to orientation year students.
5. Graders should be assigned courses that they are quite familiar with. Their performance should be closely monitored by the department. Computer projects should be graded thoroughly on the screen to reduce the likelihood of cheating.
6. Introducing an introductory course on computing in the orientation year.
7. Faculty/students interaction should be maintained through periodical informal gatherings. Also, the department should play an active role in the supervision of the computer club.
8. Promote funded research and projects in the department.

APPENDIX A

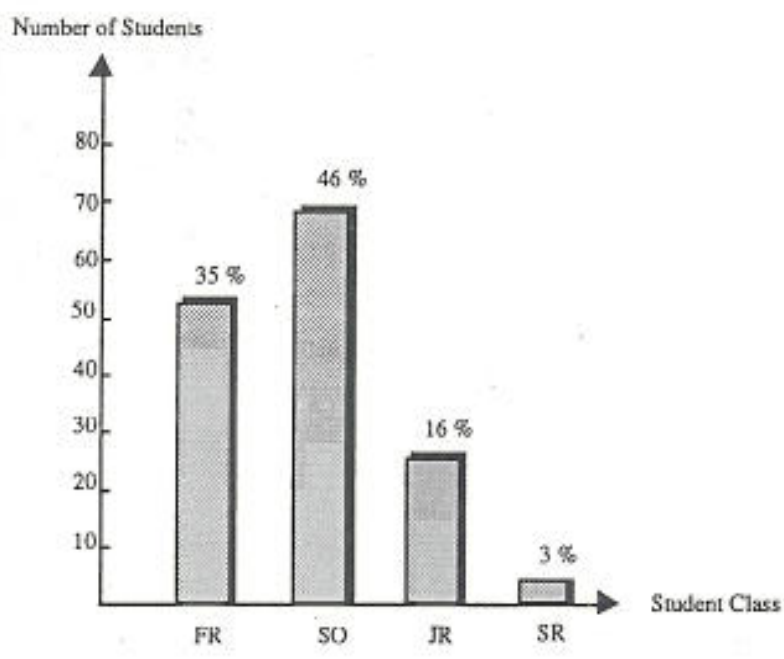


Figure A.1

Distribution of Students by Class

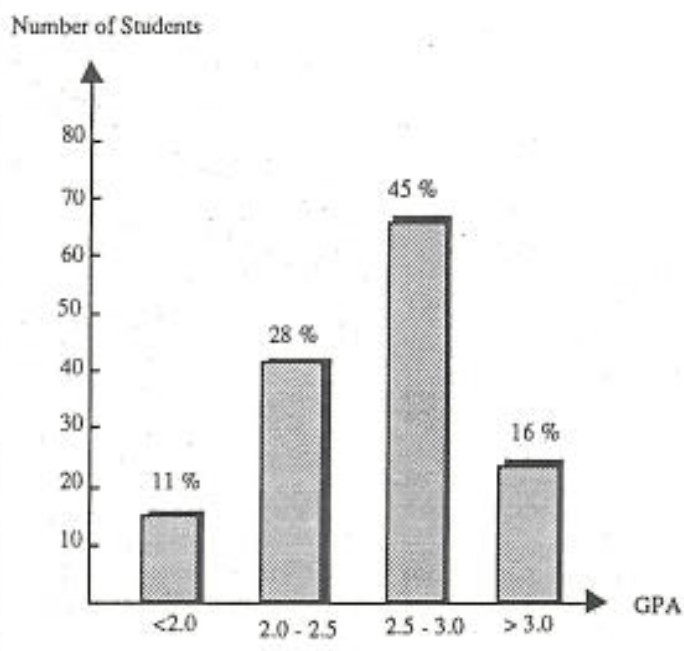


Figure A.2

Distribution of Students by GPA

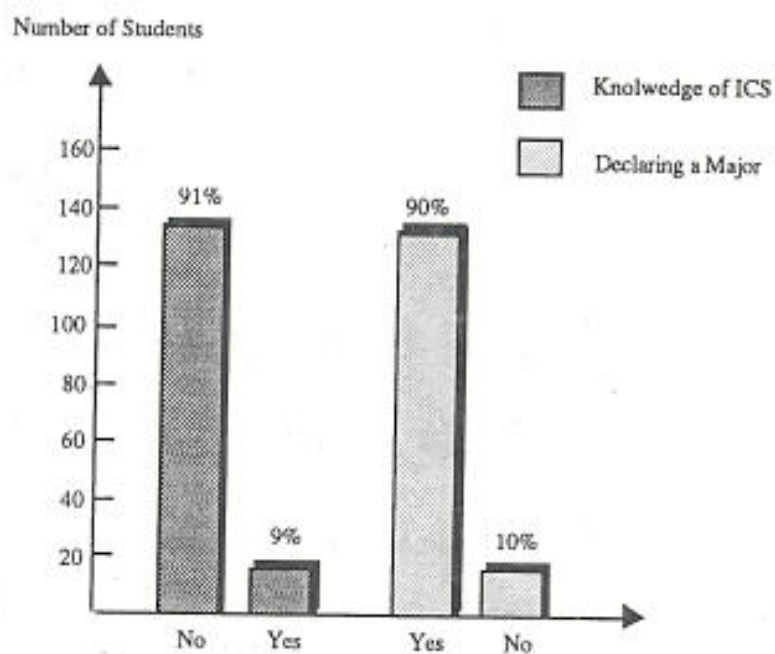


Figure A.3

Distribution of Students by Knowledge of ICS and Declaring a Major

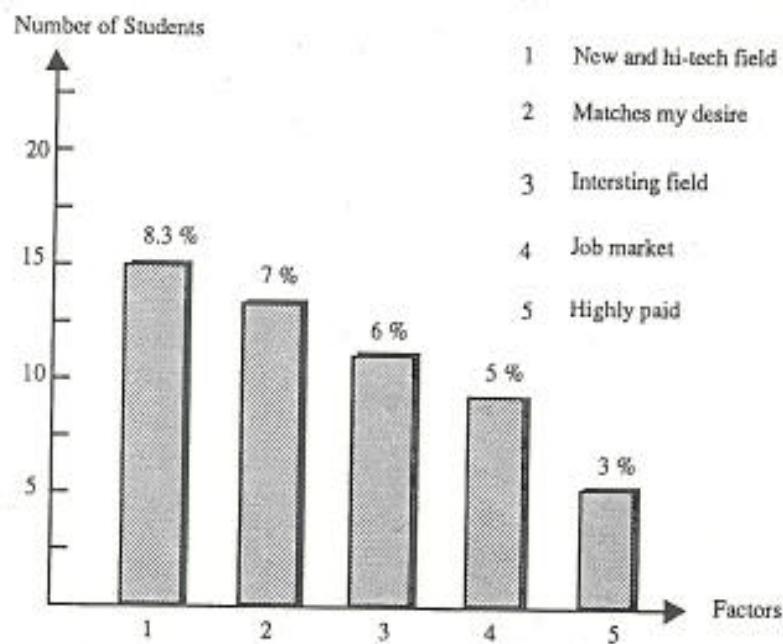
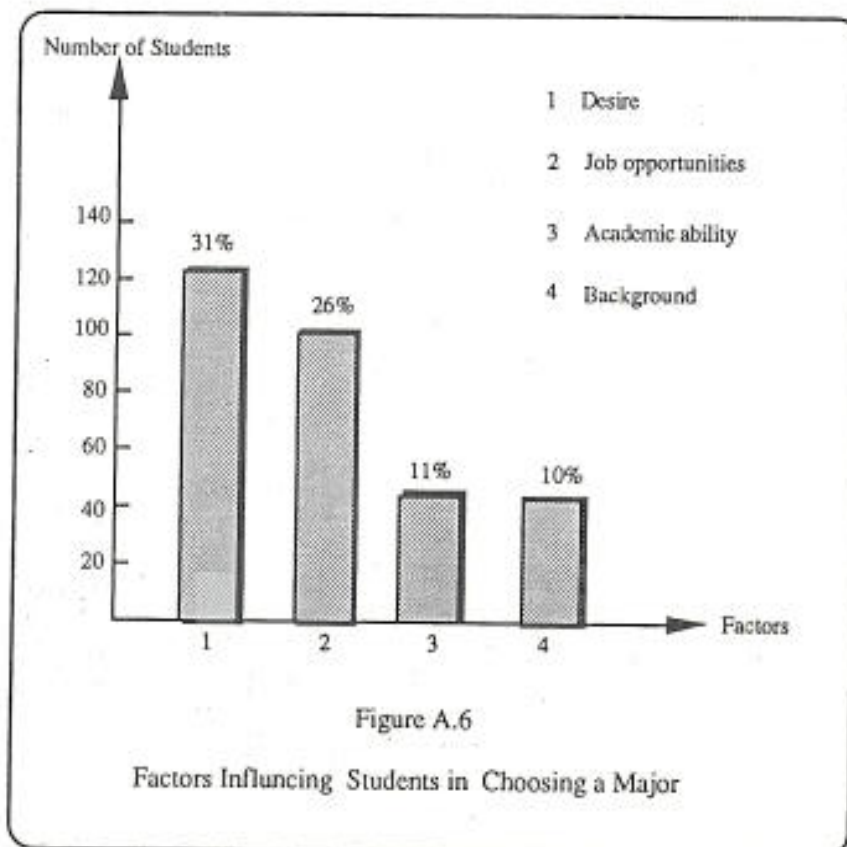
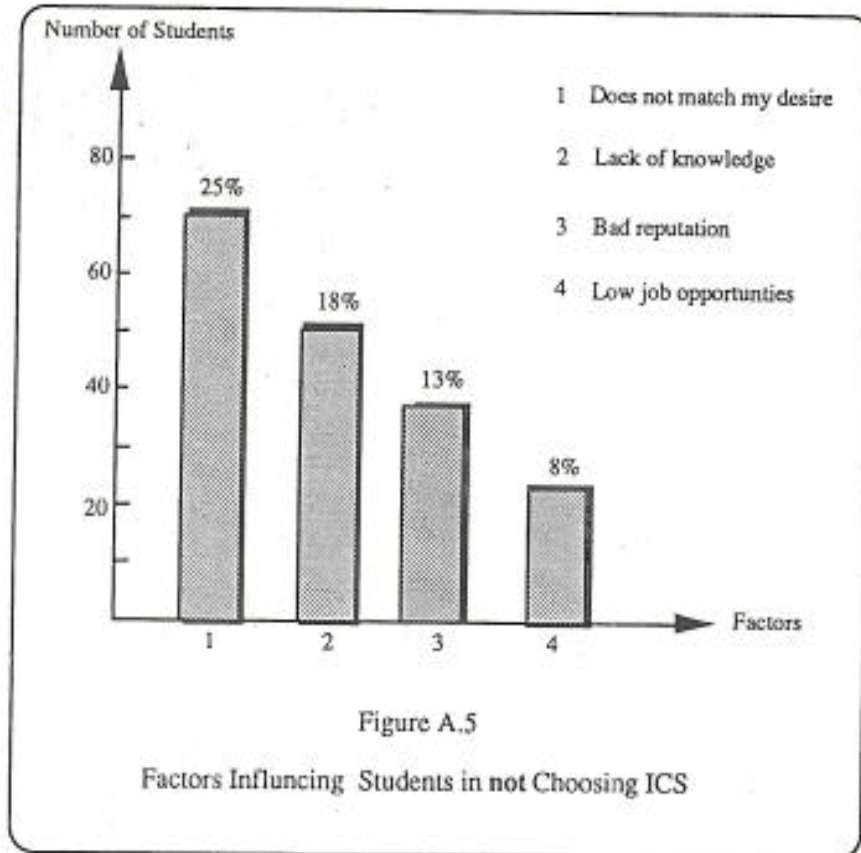
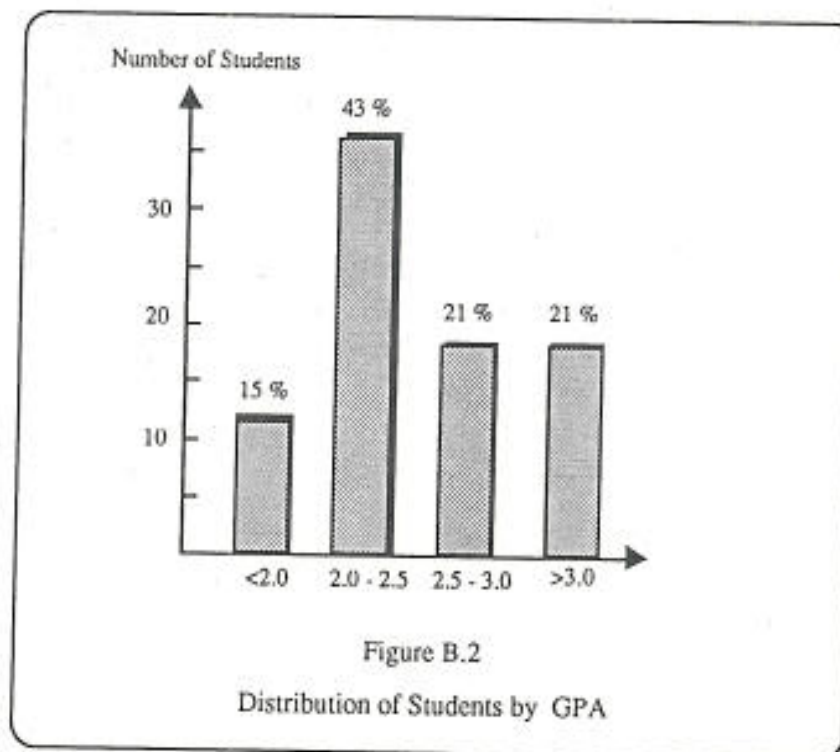
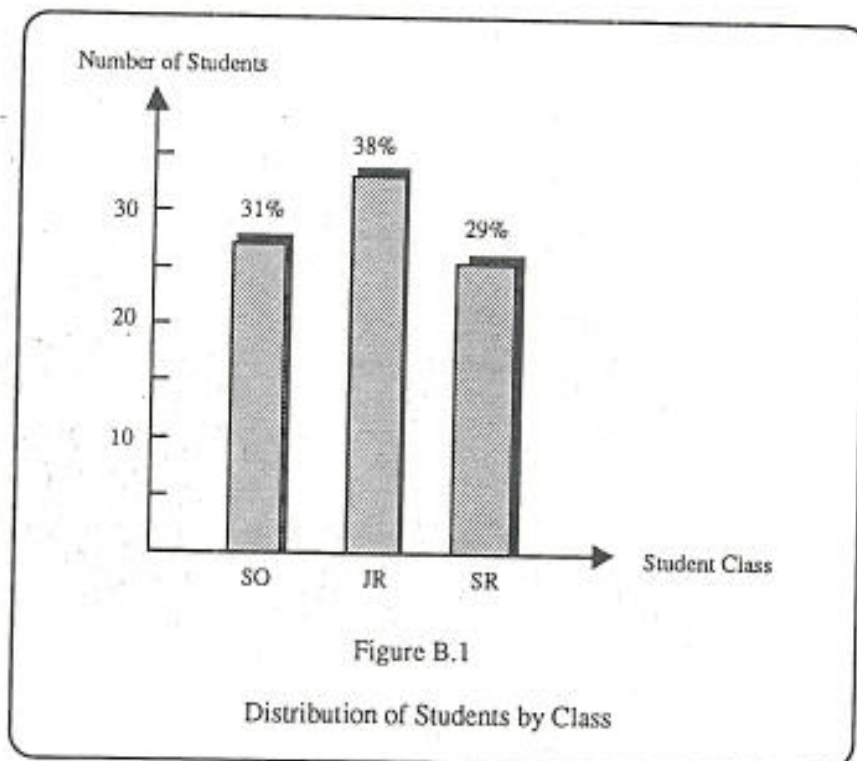


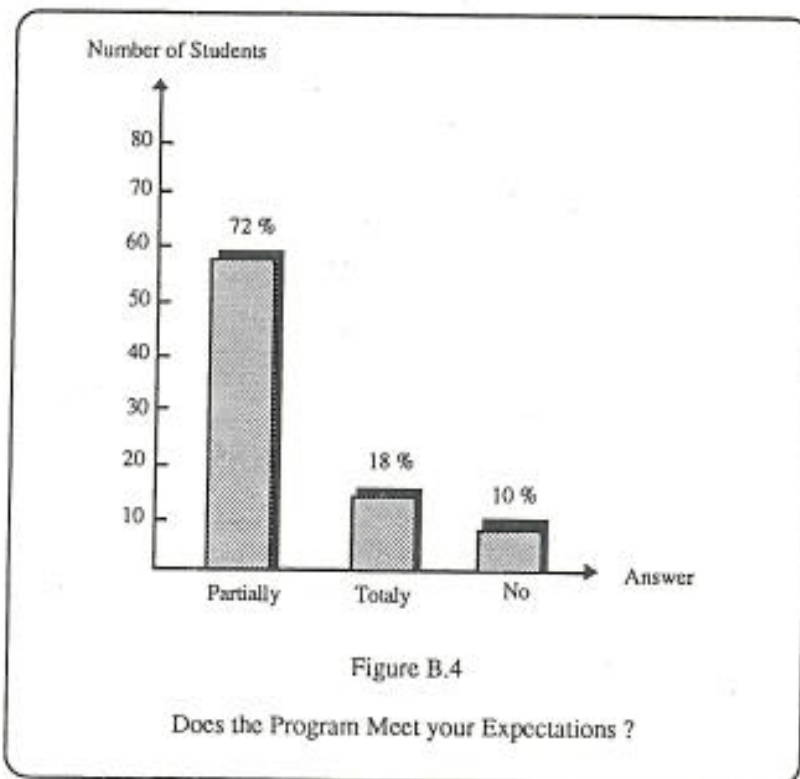
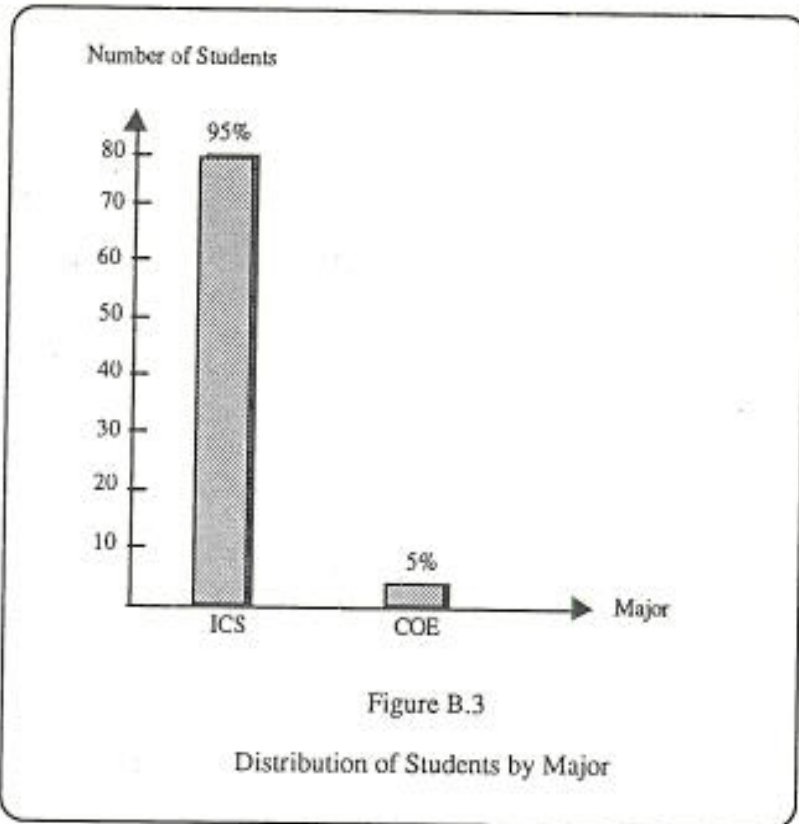
Figure A.4

Factors Influencing Students in Choosing ICS



APPENDIX B





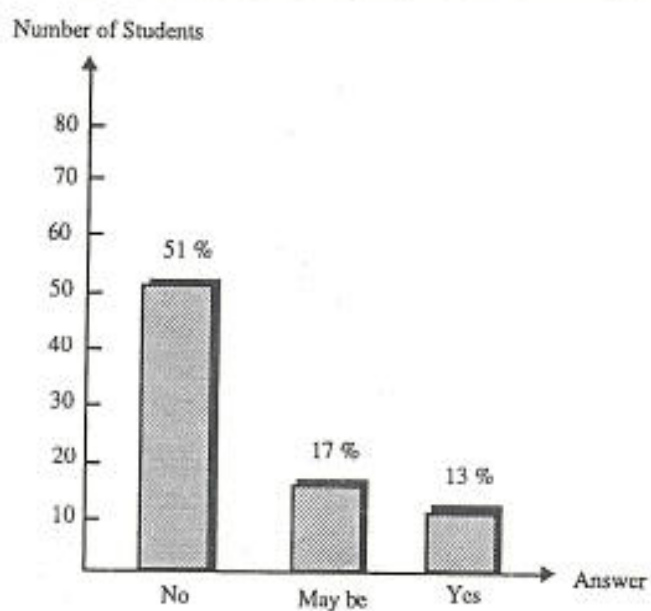


Figure B.5

Would you like to change your ICS major ?

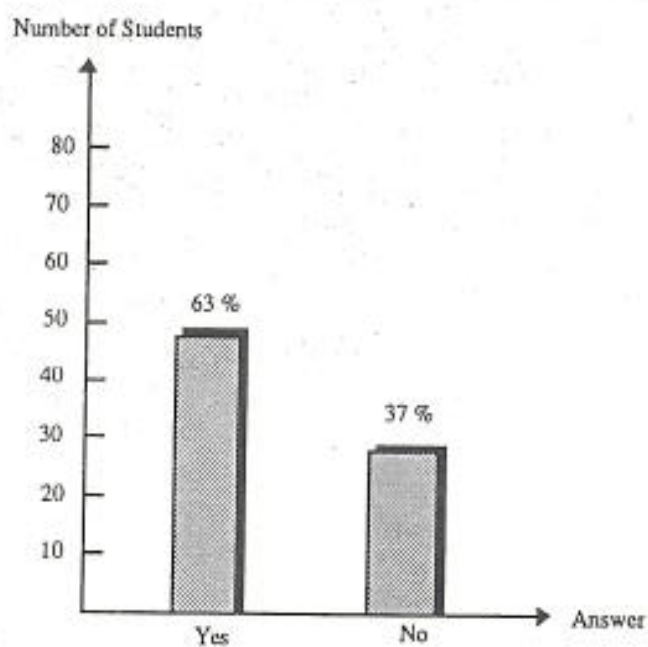
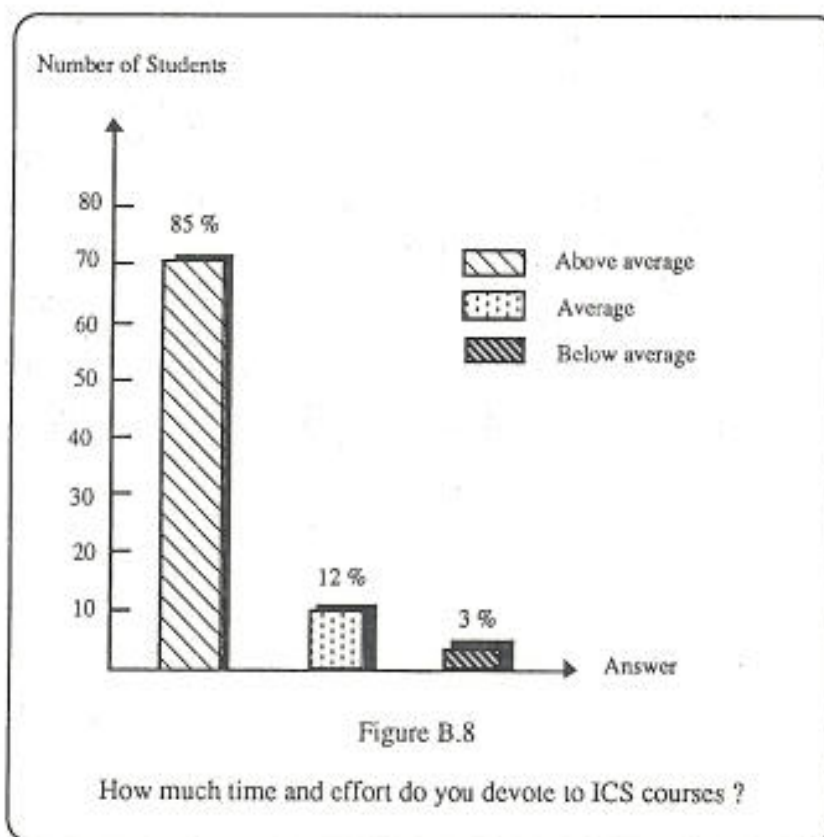
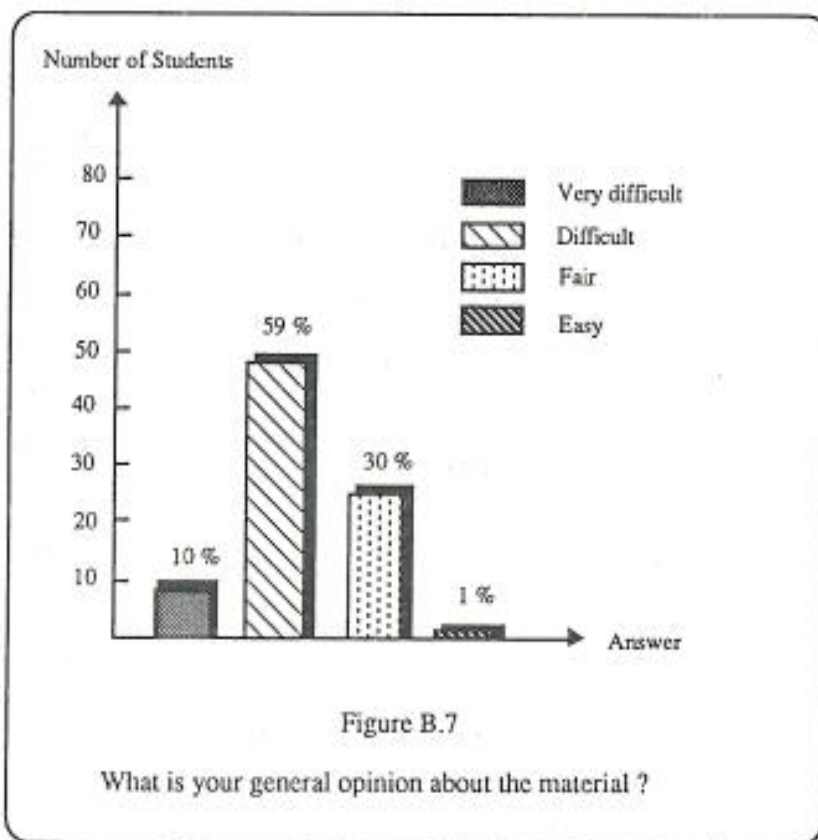


Figure B.6

Would you advise your friends to join ICS ?



Number of Students

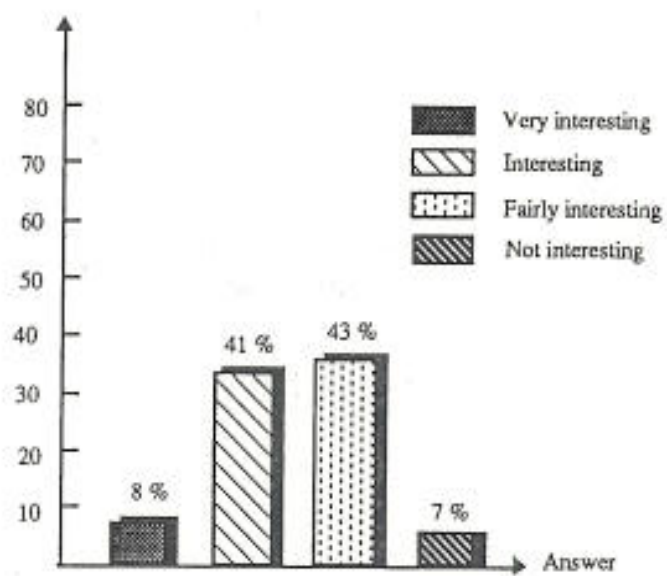


Figure B.9

Are ICS courses interesting ?

Number of Students

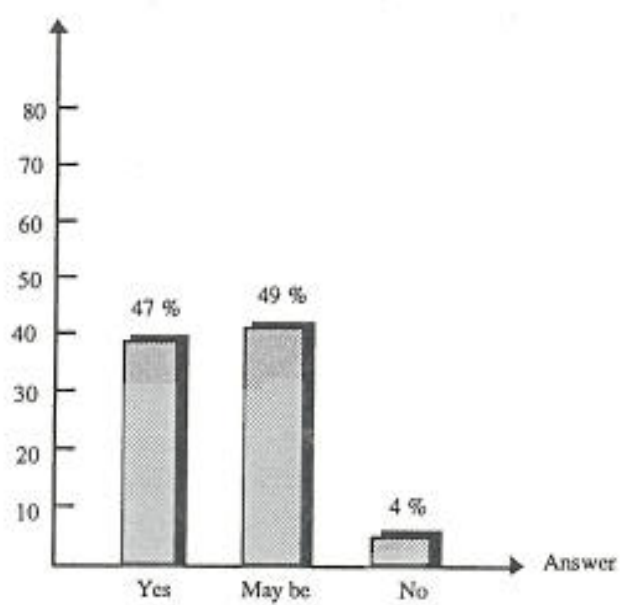
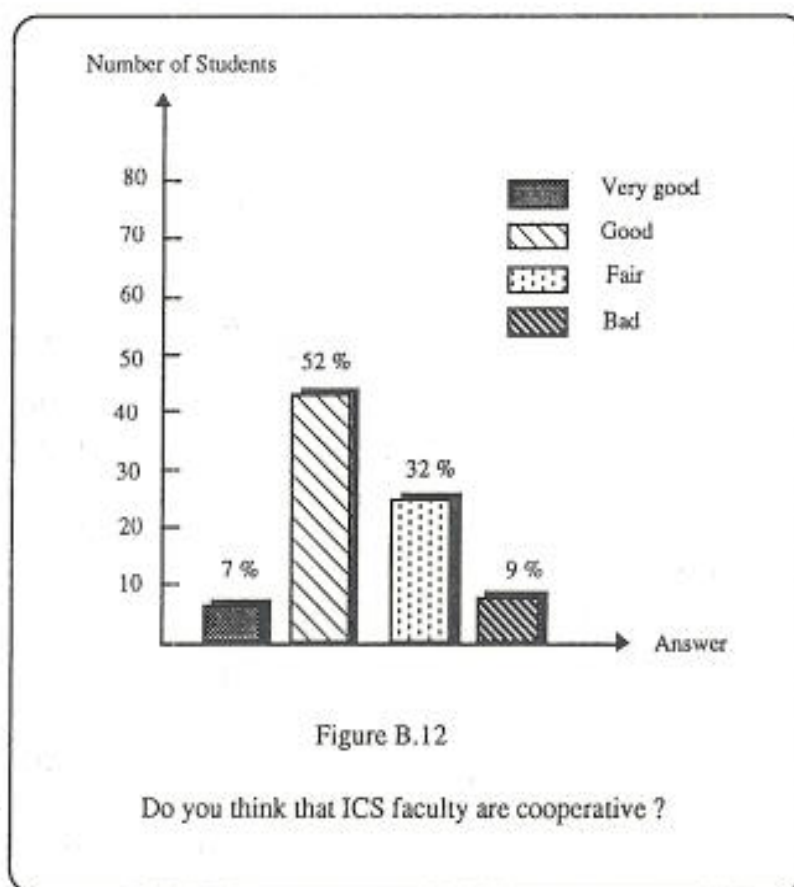
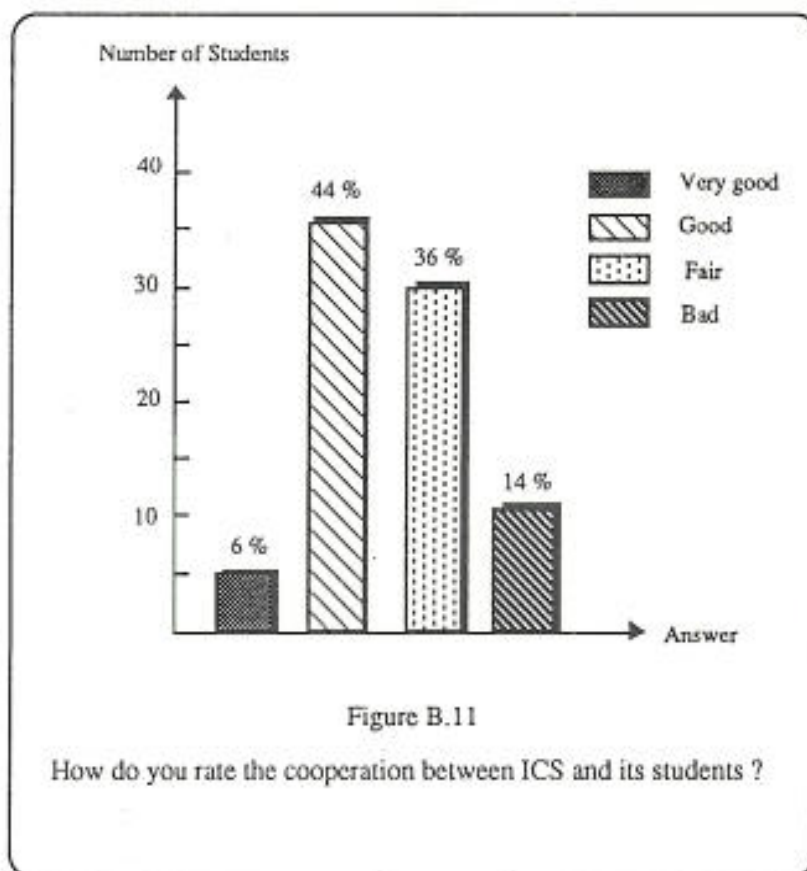
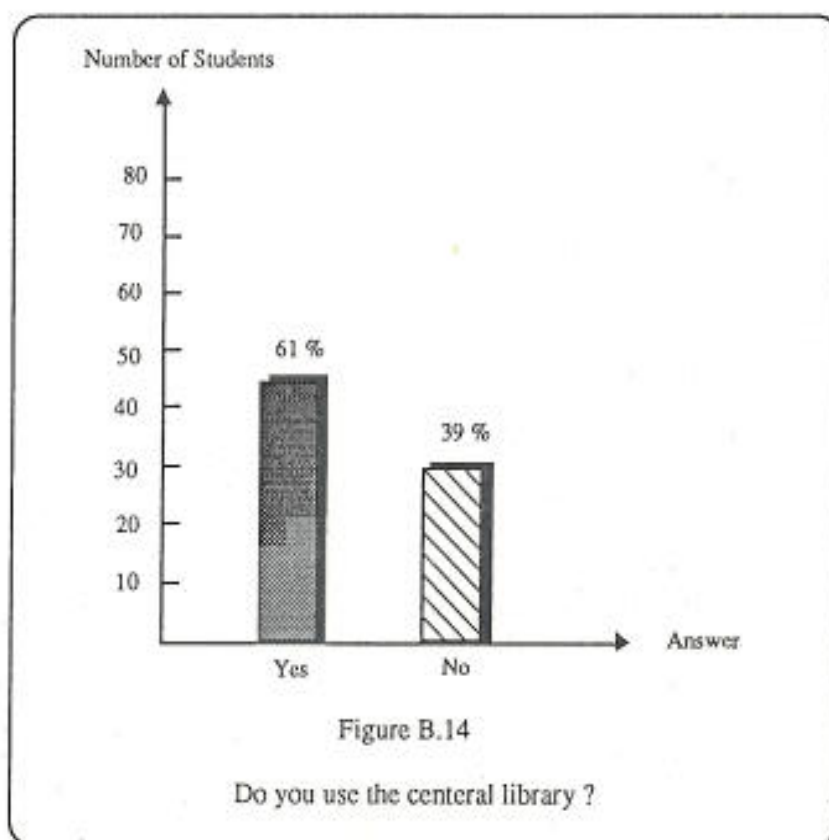
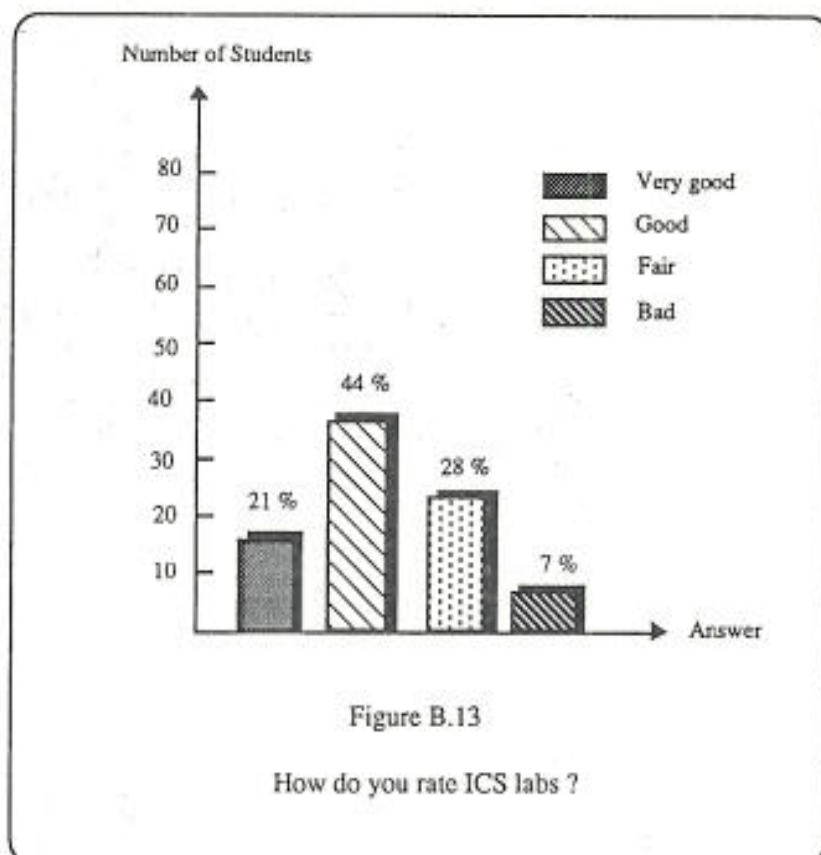


Figure B.10

Will ICS courses help you in your career ?





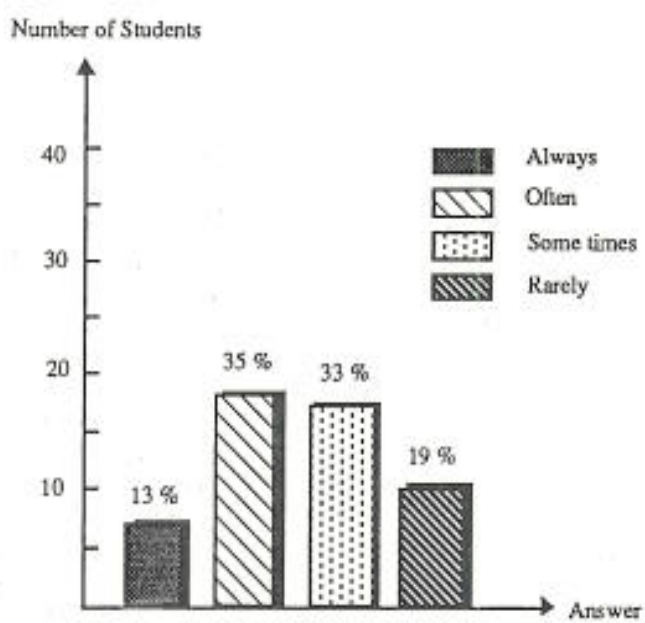


Figure B.15

Do you find the resources you need in the library ?

APPENDIX C

بسم الله الرحمن الرحيم

قسم علوم الحاسب الآلي والمعلومات

استبيان

عزيزي الطالب ،

ان قسم علوم الحاسب الآلي والمعلومات يقوم فى الوقت الحاضر بتقييم فعالية برامج الدراسة ووضع خطط مستقبلية طموحة للوصول ببرامجه الى اعلى المستويات التى تدعم مسيرة التنمية بالمملكة العربية السعودية وتحقيق لأبنائنا الطلاب طموحاتهم بمستقبل مشرق .

وأحد هذه الخطوات التى ارتئى القسم القيام بها هو هذا الاستبيان لمعرفة نظرة الطلبة لتخصص علوم الحاسب الآلي والمعلومات .

نأمل القيام بتعبئة هذا الاستبيان بدقة ولكم الشكر مقدماً .

السؤال الأول : ما هو مستواك الدراسي ؟

() SR () JR () SO () FR
السنة الرابعة السنة الثالثة السنة الثانية السنة الاولى

السؤال الثاني : ما هو معدلك التراكمي ؟

() () () ()
اقل من ٢.٠٠ ٢.٠٠ الى ٢.٥٠ ٢.٥٠ الى ٣.٠٠ اكثر من ٣.٠٠

السؤال الثالث : هل تعتقد ان لديك خلفية كاملة عن تخصص علوم الحاسب الآلي والمعلومات ؟

() لا () نعم

السؤال الرابع : هل حددت تخصصك بصفة شبه نهائية ؟ نعم () لا ()
أمل أجابة باقى الأسئلة أمل الانتقال الى السؤال السابع

السؤال الخامس: إذا كان تخصصك علوم الحاسب الآلي والمعلومات أمل تحديد العوامل التي كان لها تأثير في اختيارك لهذا التخصص (يمكن إختيار أكثر من عامل) .

- () التخصص يناسب ميولي .
- () التخصص من أكثر المجالات حداثة وتطوراً و انتشاراً .
- () وجود فرص عمل متنوعة وذات مردود مالى جيد .
- () توفر مجالات العمل فى معظم مناطق المملكة .
- () علوم الحاسب الآلي والمعلومات من التخصصات المتعة والشيقة .
- () أسباب اخرى (تأمل ذكرها)

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السؤال السادس: اذا لم يكن تخصصك علوم الحاسب الآلي والمعلومات فماهي العوامل التي دعتك لعدم اختيار هذا التخصص ؟

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السؤال السابع : فى اعتقادك ماهي اهم ثلاثة عوامل تؤثر فى اختيارك لتخصص ما ؟

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بسم الله الرحمن الرحيم
قسم علوم الحاسب الآلي والمعلومات
استبيان

عزيزي الطالب ،

ان قسم علوم الحاسب الآلي والمعلومات يقوم فى الوقت الحاضر بتقييم فعالية برامجہ الدراسية ووضع خطط مستقبلية طموحة للوصول ببرامجه الى اعلى المستويات التى تدعم مسيرة التنمية بالملكة العربية السعودية وتحقق لأبنائنا الطلاب طموحاتهم بمستقبل مشرق . ومن اجل تحقيق ذلك يطرح القسم هذا الاستبيان لمعرفة اى مشاكل تواجه طلبة قسم علوم الحاسب الآلي والمعلومات . نأمل القيام بتعبئة هذا الاستبيان بدقة مع ملاحظة أن يكون النقد بناءً وإبداء الحلول كلما أمكن حتى تتمكن جميعاً من الوصول الى الهدف المنشود ، ولكم الشكر مقدماً .

١ - ما هو مستواك الدراسي ؟

- () SO () JR () SR () GR
السنة الثانية السنة الثالثة السنة الرابعة ماجستير

٢ - ما هو معدل التراكمي ؟

- () () () ()
اقل من ٢.٠٠ ٢.٠٠ الى ٢.٥٠ ٢.٥٠ الى ٣.٠٠ اكثر من ٣.٠٠

٣ - ما هو تخصصك ؟

- () () ()
علوم الحاسب الآلي والمعلومات هندسة الحاسب الآلي تخصص آخر

٤ - اذا كان تخصصك علوم الحاسب الآلي والمعلومات أمل تحديد العوامل التى كان لها تأثير فى اختيارك لهذا التخصص :

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٥ - اذا لم يكن تخصصك علوم الحاسب الآلي والمعلومات فما هي العوامل التى دعيتك لأختيار تخصص اخر ؟

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٦ - يحتوي هذا السؤال على عدة فقرات تتعلق بالمنهج ومواد التخصص . (هذا السؤال معد في الأساس لطلبة علوم الحاسب الآلي ولكن يمكن لغيرهم من الطلبة الأجابه على الاسئله التي تنطبق على مواد الحاسب التي درسوها) ؟

أ - هل تعتقد أن البرنامج مطابق لتوقعاتك قبل دخول التخصص ؟
() () ()
مطابق تماماً مطابق جزئياً غير مطابق

ب- هل ترغب بتغيير التخصص (إذا كان ذلك ممكناً وعملياً) ؟
() () ()
لا ربما نعم

ج - هل تنصح زميل آخر باختيار التخصص ؟
() ()
نعم لا

د - ما رأيك ببرنامج الدراسة بصفه عامه ؟
() () () () ()
صعب جداً صعب مناسب سهل سهل جداً

هـ - الجهد والوقت المطلوب في مواد التخصص (يمكنك تحديد بعض المواد اسفل الخانات) ؟
() () () () ()
كثير جداً كثير مناسب قليل غير ذلك

و - هل تعتقد أن مواد الدراسة شيقه وممتعه (يمكنك تحديد بعض المواد اسفل الخانات) ؟
() () () ()
شيقه جداً شيقه شيقه نسبياً غير شيقه

ذ - هل تعتقد أن مواد التخصص سوف تساعدك في حياتك العمليه بعد التخرج ؟
() () ()
نعم ربما لا اعتقد

خ - ماهى مواد التخصص فى برنامج الدراسه التى واجهت فيها صعوبات مع بيان نوعية الصعوبات ؟

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ي - ماهى الأشياء التى تود تغييرها فى البرنامج الدراسى (مناهج ، طرق تدريس ، معامل الخ) مع ابداء اقتراحات بالحلول كلما امكن ؟

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٧ - يحتوى هذا السؤال على عدة فقرات متعلقة بقسم علوم الحاسب الآلي والمعلومات ؟

أ - ما هو مدى تعاون القسم مع الطلبة ؟

() () () ()
جيد جداً جيد مقبول سيئ

ب- ما هو مدى تعاون هيئة التدريس في القسم مع الطلبة ؟

() () () ()
جيد جداً جيد مقبول سيئ

ج - ما رأيك بمعامل ومختبرات القسم ؟

() () () ()
جيد جداً جيد مقبول غير جيد

د - ما هي أهم المشاكل التي تواجهك في القسم واقتراحاتك لحلها ؟

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٨ - هل تستخدم المكتبة المركزية بالجامعة في مجال تخصصك ؟

() ()
لا نعم

في حالة الإجابة (نعم) ما رأيك في توفر المصادر الخاصة بمواد التخصص

() () () ()
جيد جداً جيد مقبول ضعيف