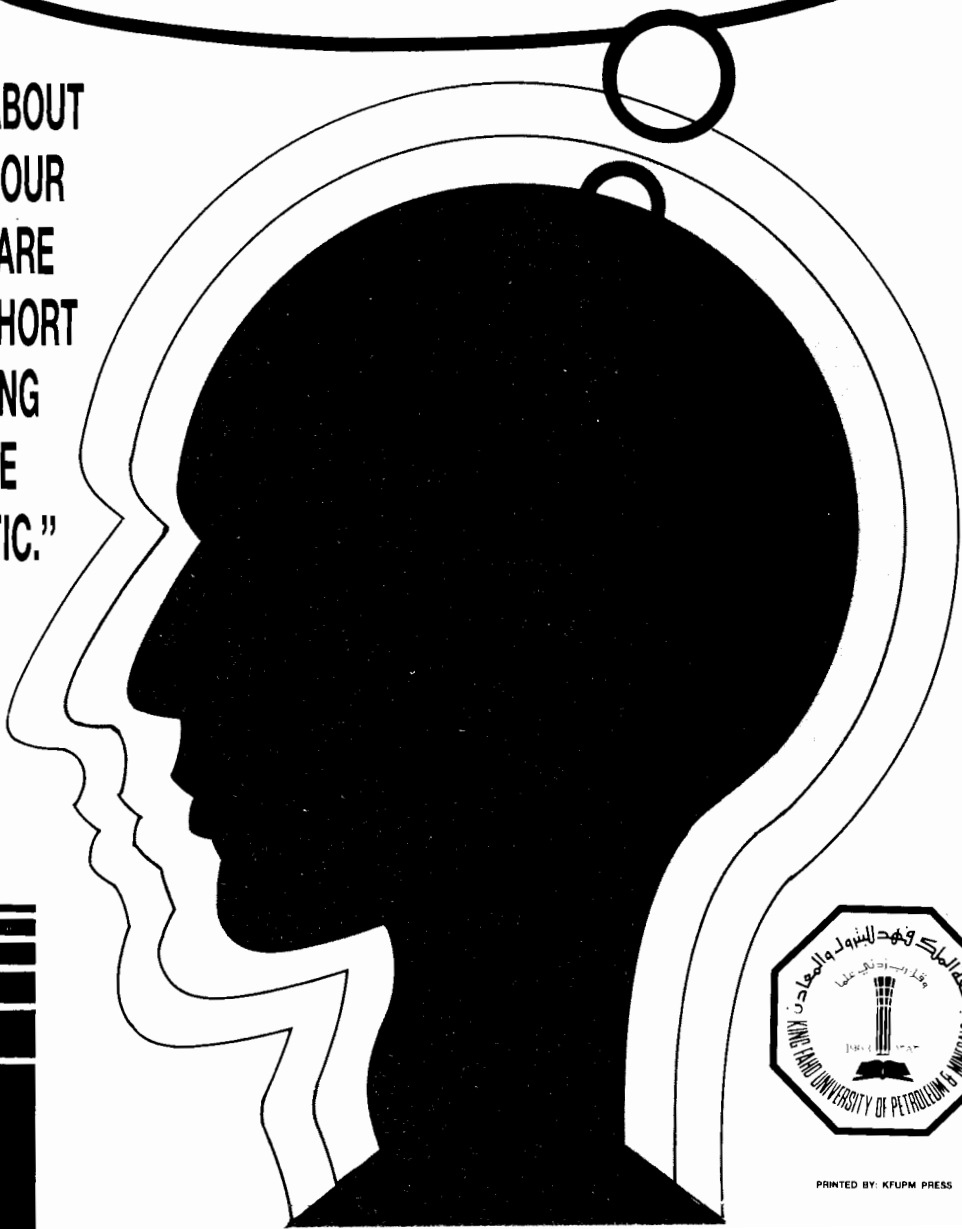
KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DHAHRAN, SAUDI ARABIA

KFUPM STUDENT STUDY GUIDE

"THINK ABOUT WHAT YOUR GOALS ARE BOTH SHORT AND LONG TERM. BE REALISTIC."



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STUDY GUIDE

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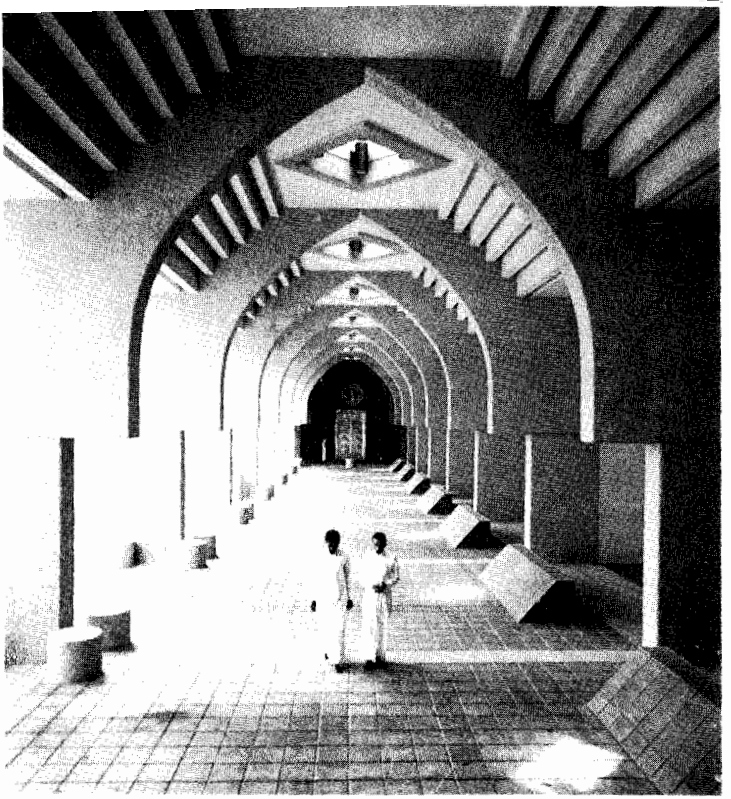

CONTENTS

KFUPM STUDENT STUDY GUIDE

This brochure is not meant to be THE ANSWER on how to study for every KFUPM student. It provides, however, some ideas and suggestions on possible ways you might use to improve your study habits.

Remember: Your success in higher education (and life, in general) depends on:

- How well and systematically you are organized;
- The quality of your plans (set high but attainable goals);
- The efficiency and discipline in executing these plans.

NEED TO DEVELOP EFFICIENT STUDY HABITS

Having done well in high school does not guarantee you the same at the university. The study habits you had (in high school) were clearly sufficient to meet those demands but demands at KFUPM are greater and different from high school. There are (at least) two reasons for this:

A. NEW ENVIRONMENT - MANY DISTRACTIONS

1. Many interesting people are in close contact. Sometimes, it is difficult to refrain from spending too much time on "nonsensical chatting".
2. No nagging parents to encourage you to get your work done.
3. Many of your friends will be able (or appear to be able) to learn more with less effort than you. This can be very discouraging at times, particularly if you don't have good habits to keep you going.

B. QUANTITY AND QUALITY OF WORK

1. Greater and more difficult than in high school - allows you less free time. You are expected to absorb a greater amount of knowledge (compared to high school) in a short time.
2. May be greater than you can cope with.
3. In contrast to high school, learning relies on understanding not on memorizing.

Therefore, to succeed in your higher education, you must establish your own (self-disciplined) strategy for

- Study habits
- Study motivation
- Preparing and taking exams.

DEVELOPING MOTIVATION FOR STUDYING

After convincing yourself of the necessity to study at the university, you need to establish your goals, and determine how to evaluate your achievements.

A. ESTABLISH GOALS

1 Think about what your goals are (both short and long term); be realistic.

2. Write them down.
3. Don't lose sight of what you want to achieve.

4. Continually re-evaluate your actions to see if they are leading you to attaining your goals.

B. EVALUATE YOUR ACHIEVEMENT

1. It is a fact that you can go a long time at KFUPM without any external recognition of your successful achievement. Learn to congratulate yourself for realistic achievements when you meet both short and longer term goals.

2. Define criteria you must reach over a short period of time to achieve your goals - be realistic (*e.g.*, deciding to get all of your work done before it is due in a given week is a commendable goal. If you succeed, you'll be motivated to do the same again).

   If you do not meet these criteria, you might then consider readjusting your goals and your criteria; so, re-evaluate:

   (a) Goals
   - Are they realistic?
   - Are they important?

   (b) Criteria
   - Are they necessary for attaining goals?
   - Did you put in your best effort into attaining them?

   If you do meet these criteria, however, congratulate yourself, since you have achieved something and will probably go on to achieve more.

3. ESTABLISH A STUDY STRATEGY

A general rule: If you're working efficiently and are happy with the results that you get for the time that you have put in, then you should probably keep doing what you're doing. If you're unsatisfied with your work output or your energy input, then you need to change something. Below are some factors you might consider changing.

3.1 MENTAL AND PHYSICAL PREPARATIONS TO STUDY

A. Expectations: Is it reasonable to consider accomplishing what you want to accomplish for the work you're putting in? If not, which do you want to change?

1. Are you taking too many subjects (academic indigestion)?
2. Are you spending too much time on extra-curricular activities?

B. Physical set-up: Is your physical situation conducive to studying? You should have:

1. Good lighting,
2. Good air circulation,
3. A clear desk to work on,
4. A nondistracting place to study.

C. Mental attitude: Is your mental attitude conducive to studying?

1. Do you feel prepared to work when you sit down to do so? You should strive to get an output of 50 minutes (of deep concentration on your work) for every 60 minutes of study.
2. Have you separated in your mind "study time" from "free time"?

D. Pysical situation: Is your body in good shape?

1. Are you eating regular, balanced meals?
2. Are you getting sufficient sleep regularly?
3. Are you getting enough good exercise regularly (a few times every week)?

3.2 HOW TO LEARN THE MATERIAL

A. CLASS ATTENDANCE

1. Attend classes regularly. Missing several classes makes it extremely difficult to recover and will lead, most likely, to you dropping from the course.
2. Read the material to be covered in class before the class; this makes understanding of the material easier.
3. Sit somewhere where your attention is easily held by the class. Sitting next to friends or windows is probably not conducive to this.
4. Take notes in class
   - How to have reliable notes:
     - — After class, think about important ideas covered - jot down anything not already in notes. Compare notes with the textbook, add essential ideas not mentioned in your notes.
     - — Compare notes with others - jot down important concepts they've got which you don't.

— By the end of each course, you should have prepared two sets of notes
  * A short version (several pages) of your lecture notes;
  * And another several pages of additional concepts from your textbook.
  * **Remember:** These two sets of notes of essential concepts will be useful for preparing for exams.

- Organize your notes:
  — Be sure to keep your notes on a given topic in one file.
  — Be sure the notes are dated.
- Develop short-hand notations. If the lecture goes too fast, develop short-hand notations for frequently used words (be sure to remember what the symbols stand for!)
- **Review notes periodically.**

B. DOING HOMEWORK

1. Do it before it's due.
2. Don't rely on others to solve your homework problems (spend enough time to understand the problems).
3. Seek help only after exhaustion (but avoid getting used to it).
4. If you find yourself unable to solve problems of several homework assignments, then you are not understanding the subject, and hence will certainly have serious troubles in your exams.

C. Reading (from textbook and other books):

1. Highlight important concepts using a highlighting pen.
   - Go back and do it after you have a feel for what is important.
   - Don't highlight everything - nothing will stand out.
2. Take notes on important concepts (statements, formulas,...).
3. Review the material periodically - don't wait for exams.
4. Be sure you understand what you read. If not, determine why
   - If you're not concentrating, do something else and go back to it.
   - If you don't understand the material, find someone to explain it to you.

3.3 HOW TO DEVELOP LONG-TERM MEMORY

1. **Reception:** if you spend around 20 minutes every week to quickly review the notes, you will retain more of what you have learned for a longer time.
2. You cannot remember what you don't understand.
3. Try to form (whenever possible) an image of what you want to remember (it is easier to remember images than concepts).
4. Explain it (the contents of what you want to store in your memory) to someone else. Teaching others helps you assimilate the subject.
5. Solve examples continuously and work actively on it.

3.4 DEVELOP WEEKLY PLANNING

It's lots easier to feel motivated to work when you plan. Plan ahead - decide how much time you will need to give to your work in any given day and week.

1. Plan time for regular extra-curicular committments (but reduce them to a strict minimum).
2. Keep track of long range assignments and preparation for exams - you don't want to leave too much until the last time.
3. Set up a schedule of study times during the week.
   - At first, until you become better and easier, plan much more time than; you're likely to need.
   - DON'T LEAVE STUDYING UNTIL THE END. Be sure to plan time for study breaks and keep track of how much time is planned.
   - Find out what times are more productive to studying for you
     - — Daytime or evenings (although most people study more efficiently during daytime).
     - — Short or long periods at a time (to avoid getting bored and to increase your efficiency, it is recommended that you study for short sessions, say of 50 minutes each and take a 10 minutes break in between).
   - As soon as you feel bored with a subject, change to another one. **Remember:** mental fatigue never results from studying hard, but from becoming *bored* with the subject.
   - Make a daily list of "Things to do", set priorities. *Learn to say "NO" to people who invite you to unscheduled activities.*

- Try to discipline yourself and study daily from 7 AM to 10 PM, pause only for classes, prayers, food, and short relaxing breaks. Plan on 7 hours of sleep per night.

4. If the schedule is broken, DON'T GIVE UP - RECOVER.
5. Remember this golden rule: **Save (create) time by eliminating wasted time.**

HOW TO PREPARE FOR AND TAKE EXAMS

4.1 PROBLEM-SOLVING

Many of you have recently, or will soon encounter the novel experience of being faced with a problem you don't know how to solve. Don't give up. Instead:

A. Be patient: It sometimes takes several hours (or more) to figure out how to solve a problem.

B. Understand: Try to understand the main ideas behind the problem.

1. What is it asking for?
2. What information do you have that will help solve it?
3. How have you dealt with similar problems?
4. What are the facts you'll need to solve it? Find ways to establish them.

C. When Stuck: Sometimes you may get to a certain stage in defining and solving your problem and not know how to proceed from there. Give yourself time to think out the possibilities, but don't harp on the same thoughts with no progress for too long. Instead you need some additional input. This can be done in several ways:

1. Review the material in the text or in the class notes relevant to this area. This may give you clues.
2. Find someone to talk to - sometimes just explaining what you do know to someone can help you conceptualize where to go from there.
3. Find someone to explain things to you. Some good places to go for help are:
   - Professors: they should be available, at least during their office hours.
   - Living Group Resources.
     - — Upperclass students.
     - — Classmates - sometimes having a study group with

several people in the same course can prove mutually beneficial.

4. A good source of self-help to learn problem-solving techniques is the book of G. Polya "How to solve it", (Garden City, N.Y., Doubleday, 1957).

4.2 HOW TO PREPARE FOR EXAMS

A. BE FAMILIAR WITH ALL THE REQUIRED MATERIAL

If you missed some lectures

- Get the missing notes,
- Have someone explain what was covered (this should be done right after you miss the lecture).
- If you don't understand something, ask for help.

B. HOW TO REVIEW FOR THE EXAM

1. Talking with classmates
   - Helps you conceptualize ideas,
   - May pick up stray information and new approaches,
   - Have others point out mistakes to you,
   - It's more enjoyable to study this way (as long as you stick to the studying, not chatting).
2. Look at old exams, so that you may get to know what to expect (but don't rely too much on this approach!). Try to solve some of these exams as if you are taking them for real (by adhering strictly to the prescribed regulations), and grade yourself. After identifying your weak points correct them by consulting your notes and books.
3. Try working some "typical" problems.
4. Problem-solving techniques should be understood, not memorized. Exams contain (in most cases) problems you have never seen.
5. The day before the exam:
   - Put away books and original lecture notes:
   - Make a quick review of the two sets of condensed notes you prepared.
   - Try to relax (this includes getting a good night's sleep - AVOID GOING TO BED LATE). This will allow you to think clearly during the exam.

- Taking too much caffeine (coffee, tea,...) will make you nervous and disturbed. Try to avoid caffeine the day before and on the same day of the exam.

4.3 HOW TO TAKE EXAMS

1. Relax;
2. Think - don't just respond mechanically;
3. Skim the entire exam to see what you already know, and calibrate yourself to the difficulty of the exam;
4. Read the directions and the problems - make sure you're doing what's asked for;
5. Start working - start with something you can do first (*i.e.* easiest question). This will give you confidence to go on and tackle more.

HOW TO LEARN TECHNICAL SUBJECTS

Technical subjects (such as physics, mathematics, chemistry, engineering, etc.) cannot be learned passively; there is absolutely no substitute for tacking challenging problems. Here is where students gain the sense of satisfaction and involvement produced by a genuine understanding of the underlying principles. *Ability to solve problems is the best proof of student understanding of the subject.*

The principal source of difficulty for most students is learning how to apply mathematics to physical problems, not with mathematical techniques as such. The elements of calculus can be mastered easily, but the development of problem-solving ability requires careful guidance (guidance can be earned by solving numerous problems).

Hence, every student of technical subjects should try to fulfill these two objectives.

- Become throughly familiar with the basic laws that constitute the core of the subject, and
- Develop the ability to manipulate these ideas and apply them to concrete physical situations (problem-solving).

You can achieve the first objective by reading and rereading those sections that are highlighted in your textbook, and the second objective by solving problems. Remember to focus your attention on understanding the concepts (not on memorizing problem-solving techniques). The better you understand the concepts and ideas, the easier the rest of your undergraduate and graduate studies will be.