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# College of Computer Sciences & Engineering



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# Outline

- Introduction
- College Status
  - Some statistics
- SWOT Analysis
  - Strengths
  - Weaknesses
  - Opportunities
  - Threats
- Strategic Plan
- Conclusion



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# CCSE PAST & PRESENT STANDING

Over the last 6 years



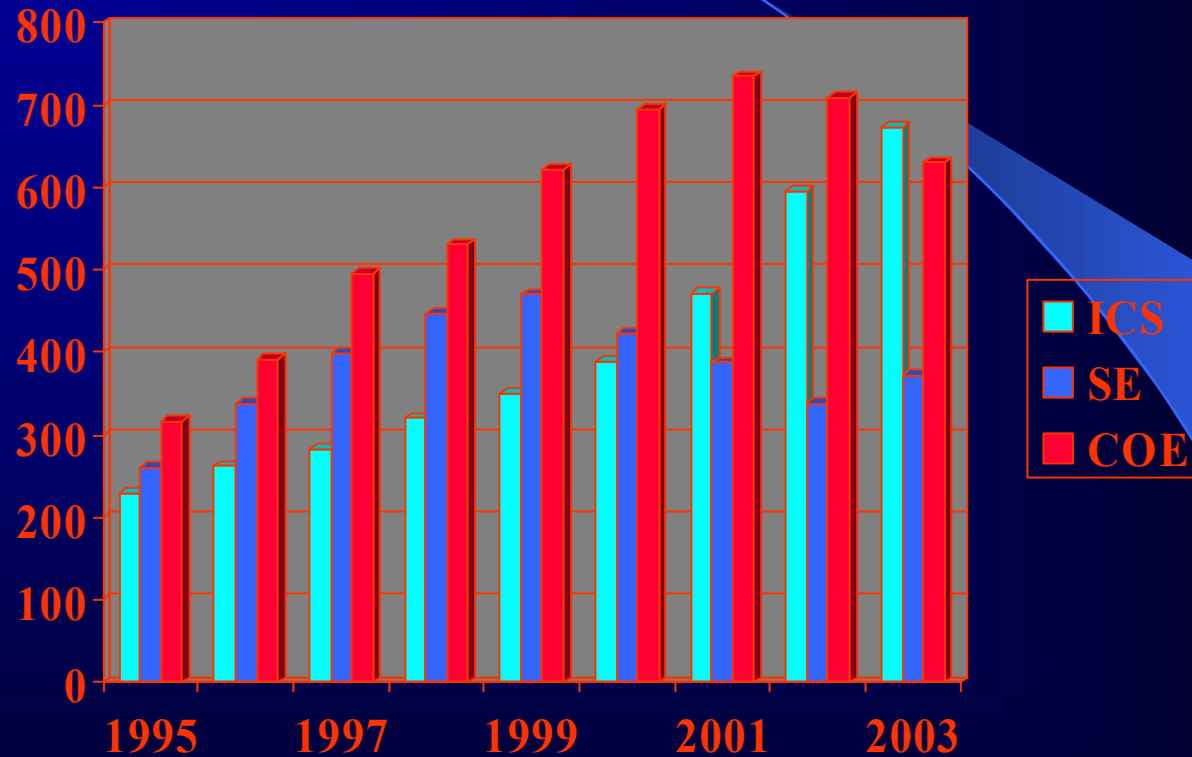
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## ate Students – Year 1995 to 2003



➤ Number of enrolled students has increased by over 200%

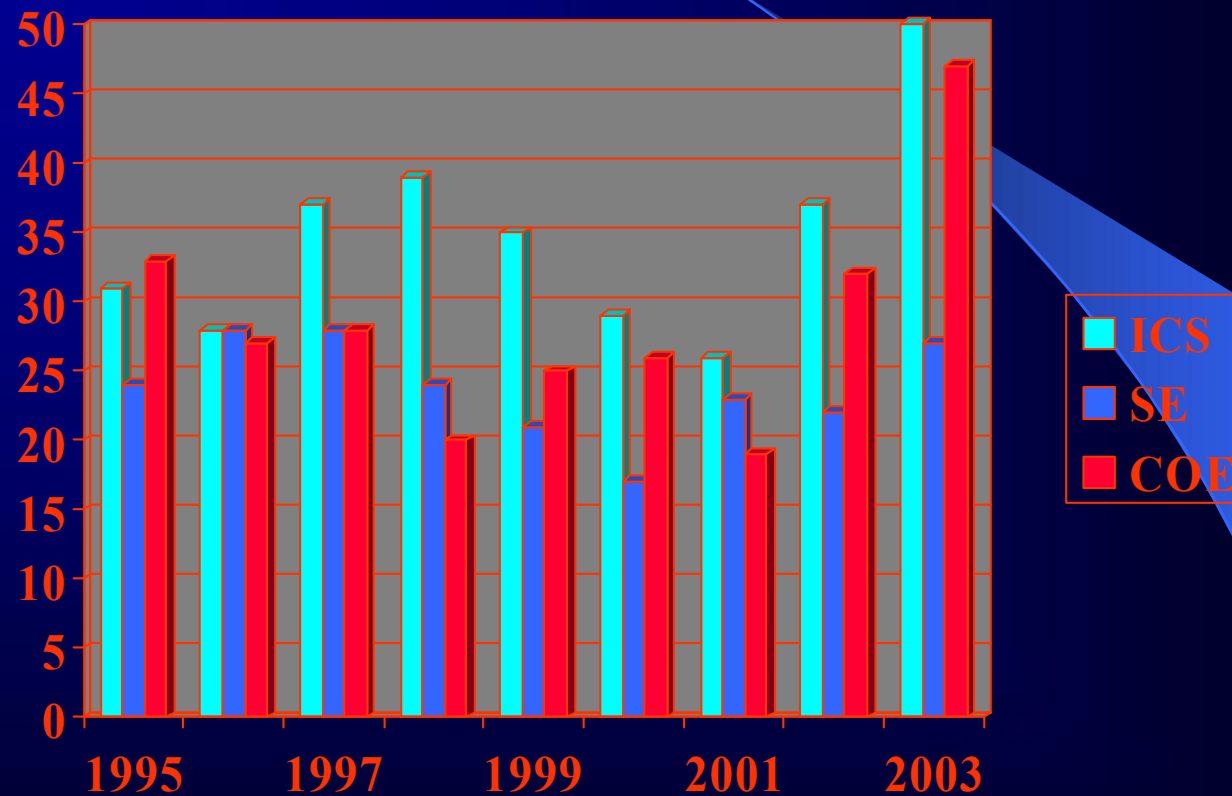


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## Students – Year 1995 to 2003



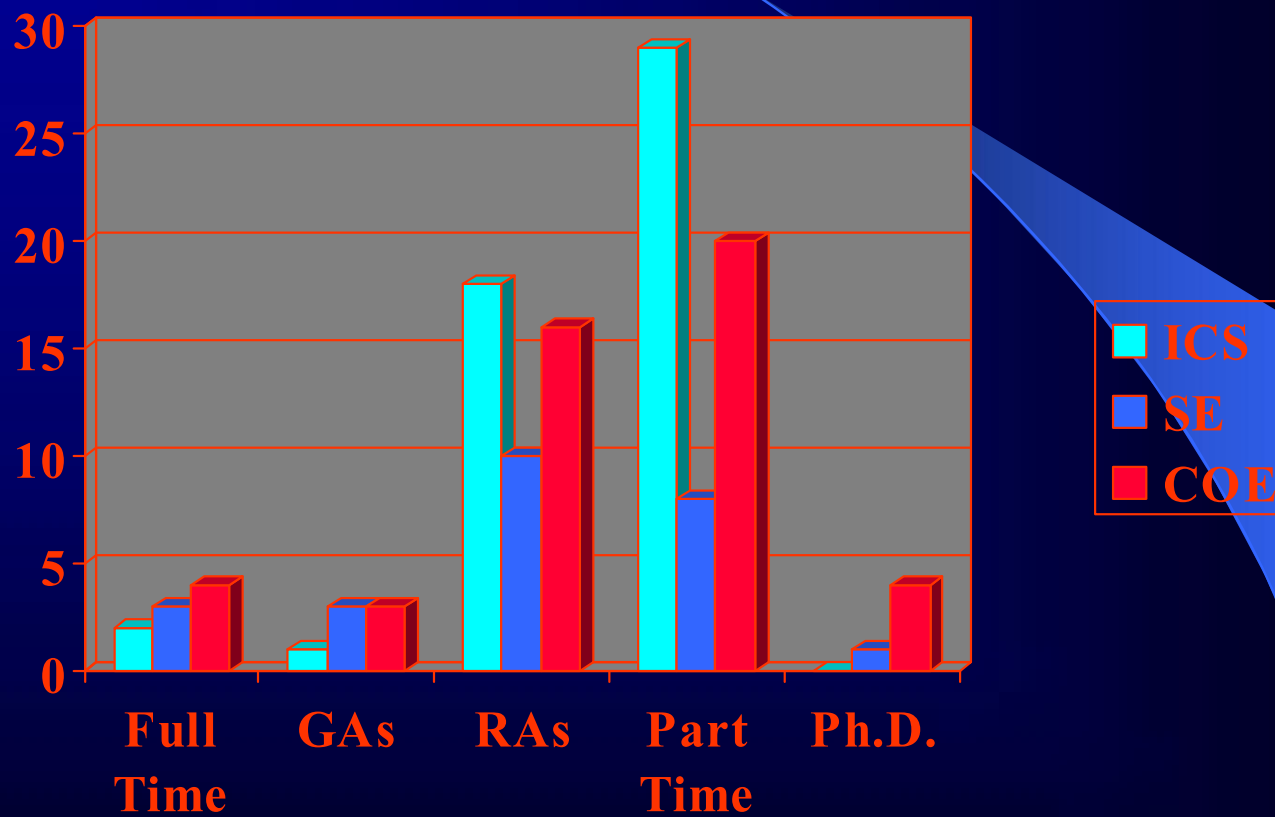


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## Graduate/PhD Students – Year 2003



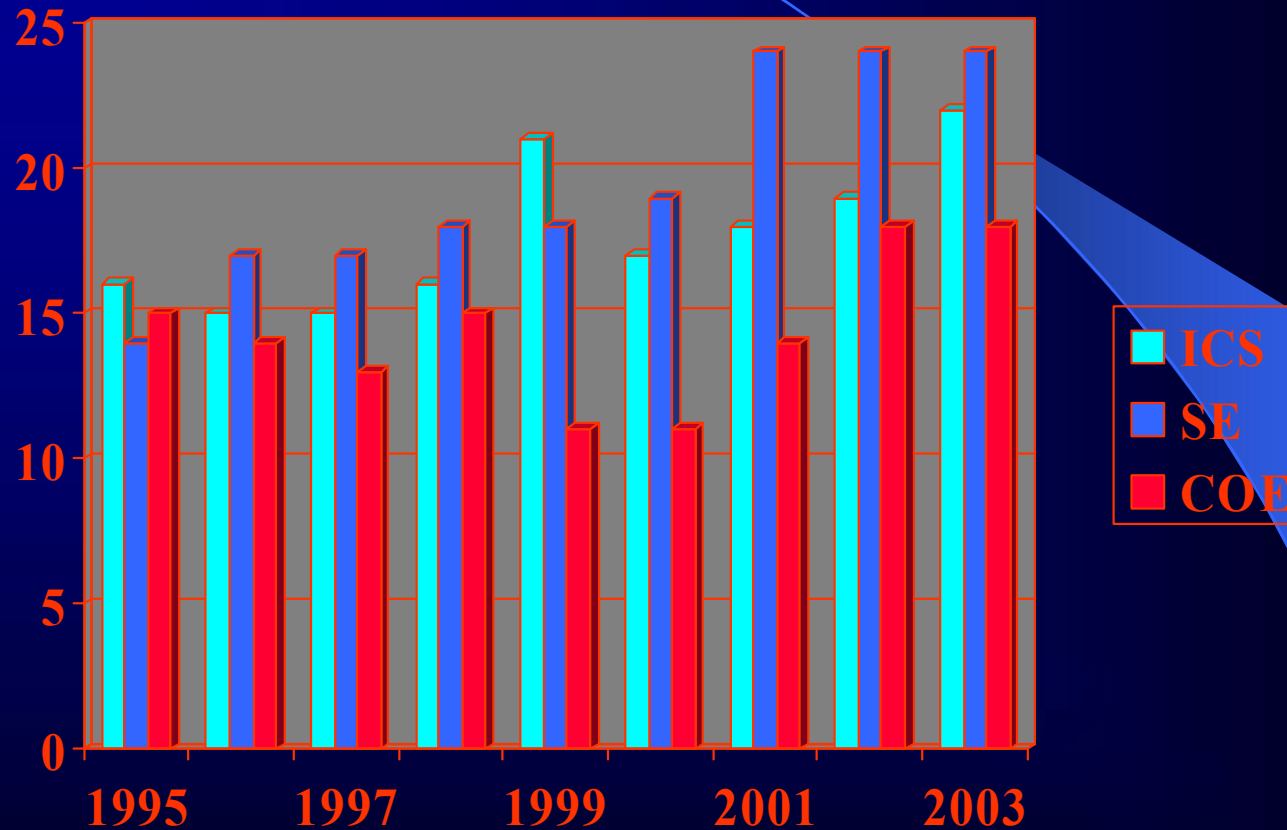


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## Assorial Rank) - Year 1995 to 2003





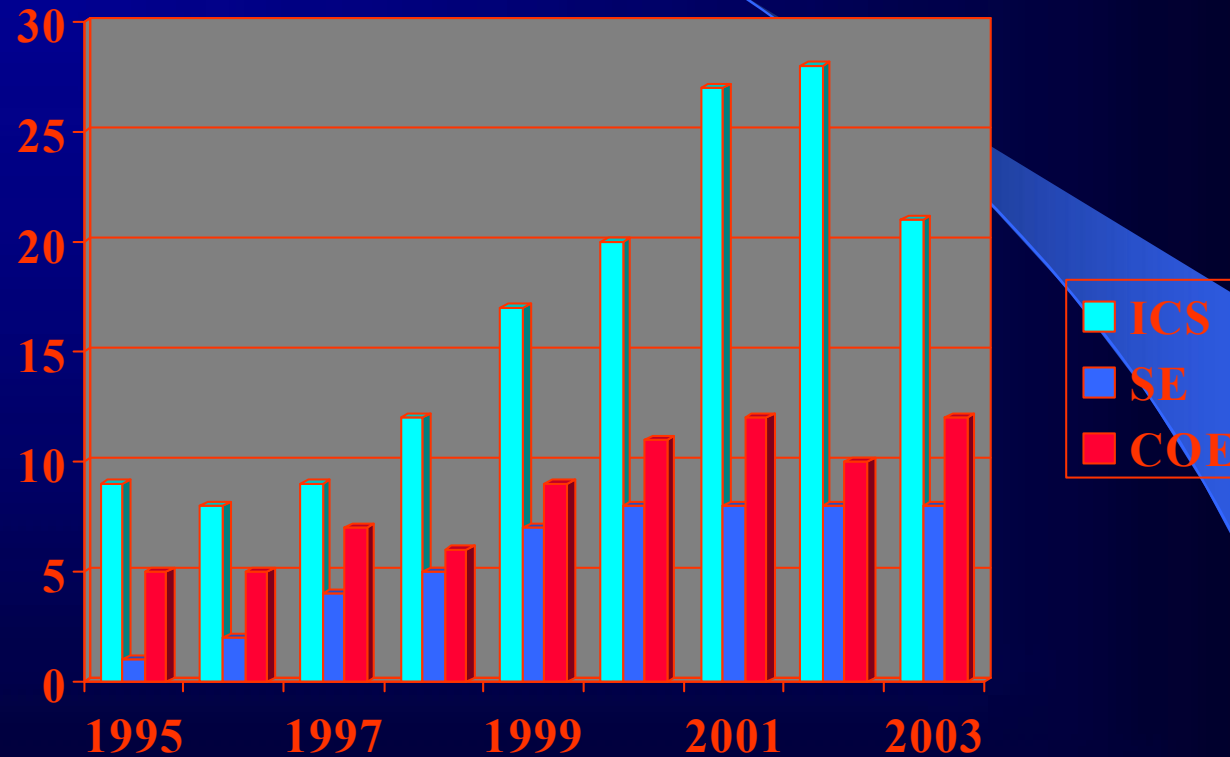
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## Lecturers - Year 1995 to 2003



➤ Major part of teaching load is taken by Lecturers





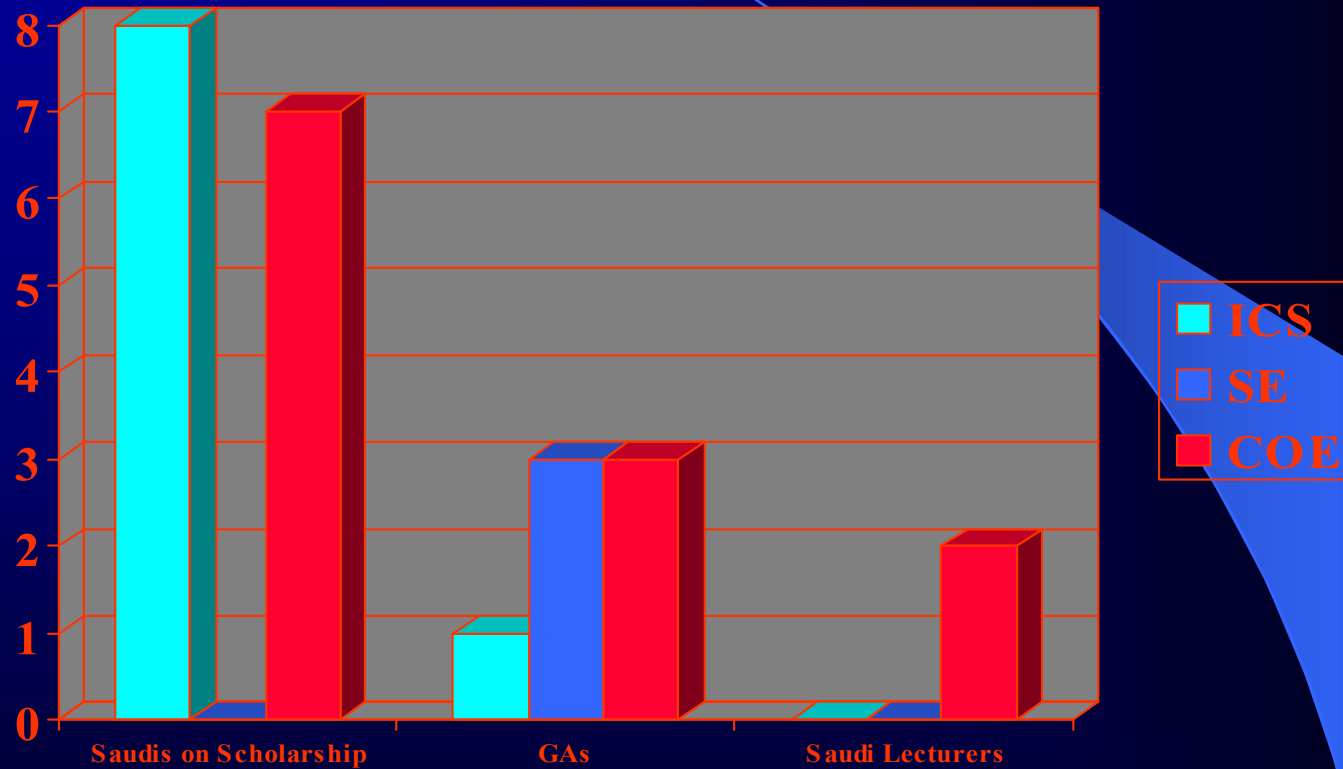
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## s/Lecturers - Year 2003





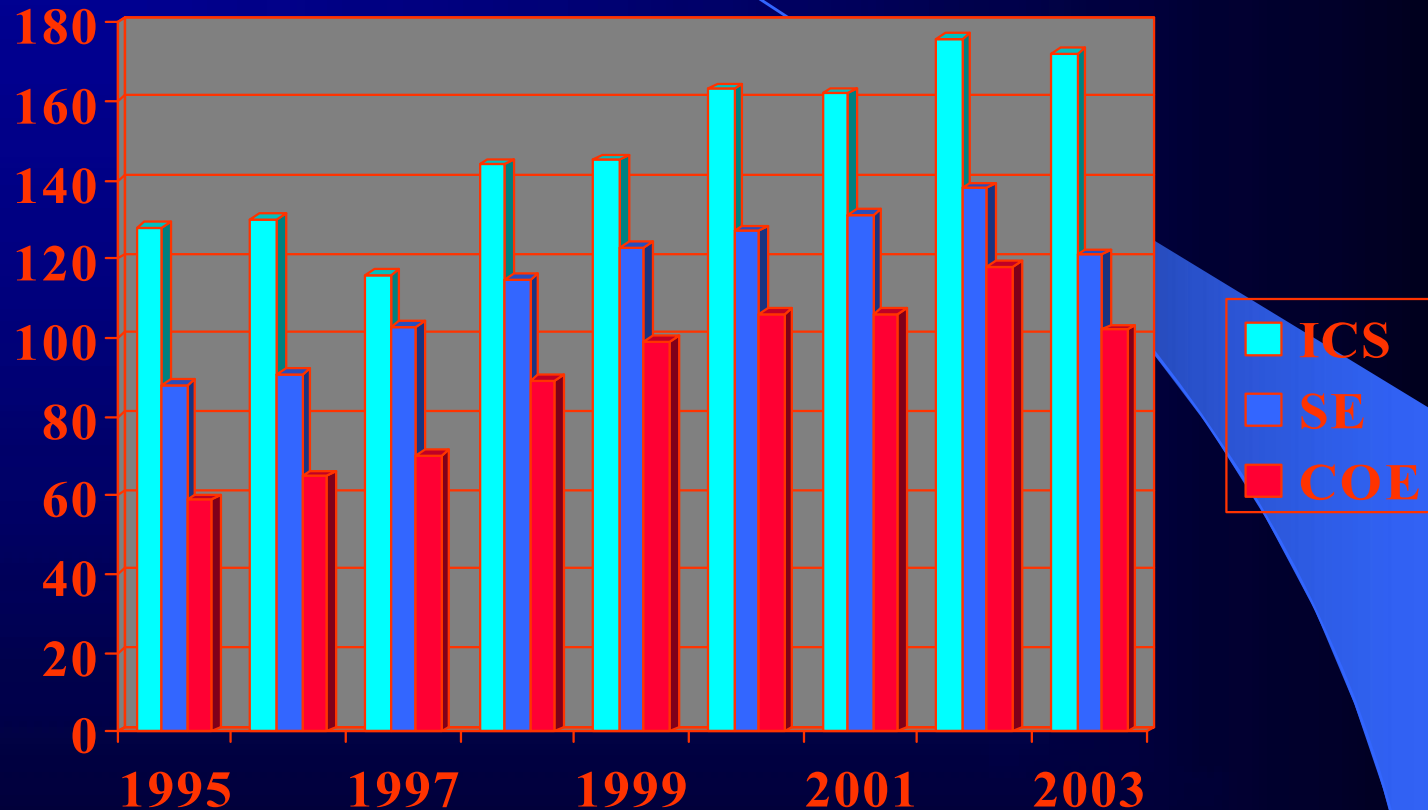
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## Number of Delivered Sections



- Large increase in the number of sections for which the courses delivered



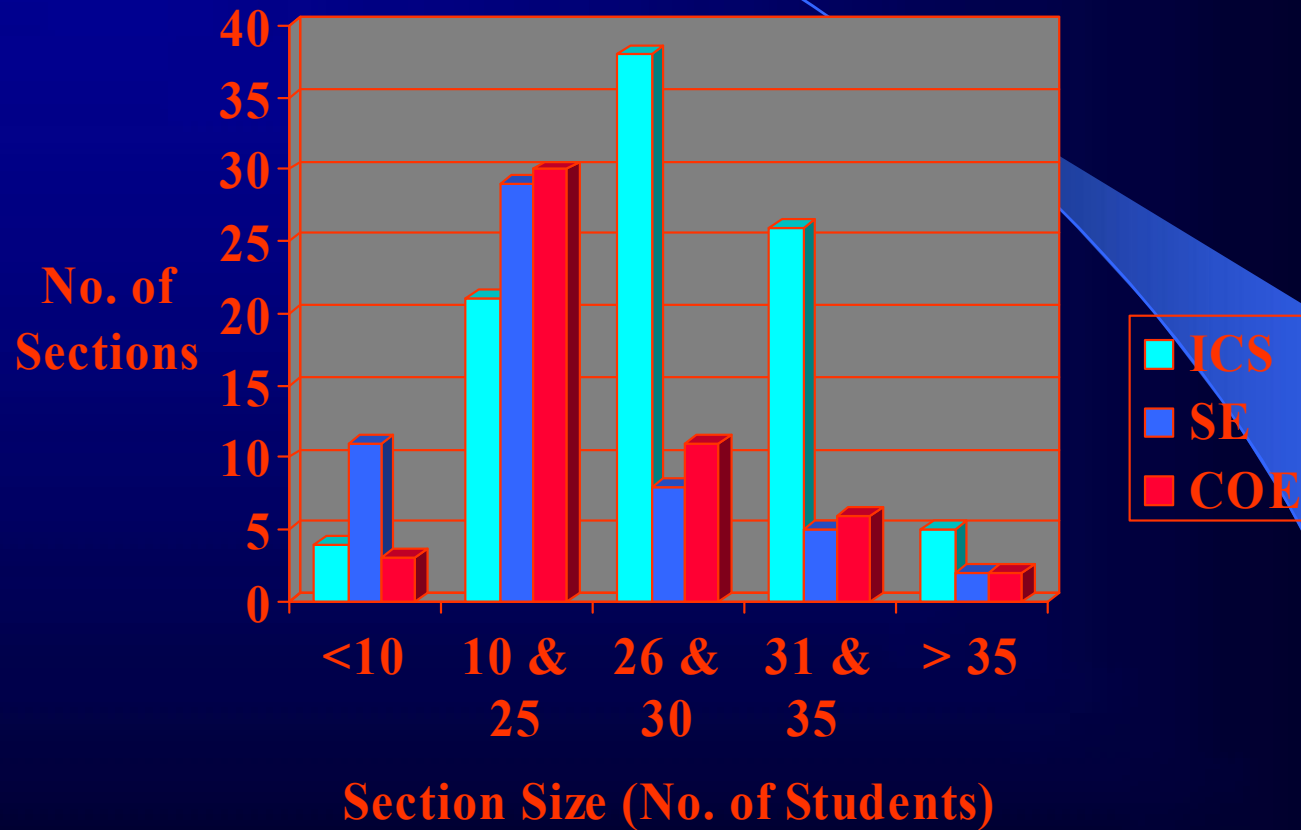
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## Section size (Term 031)



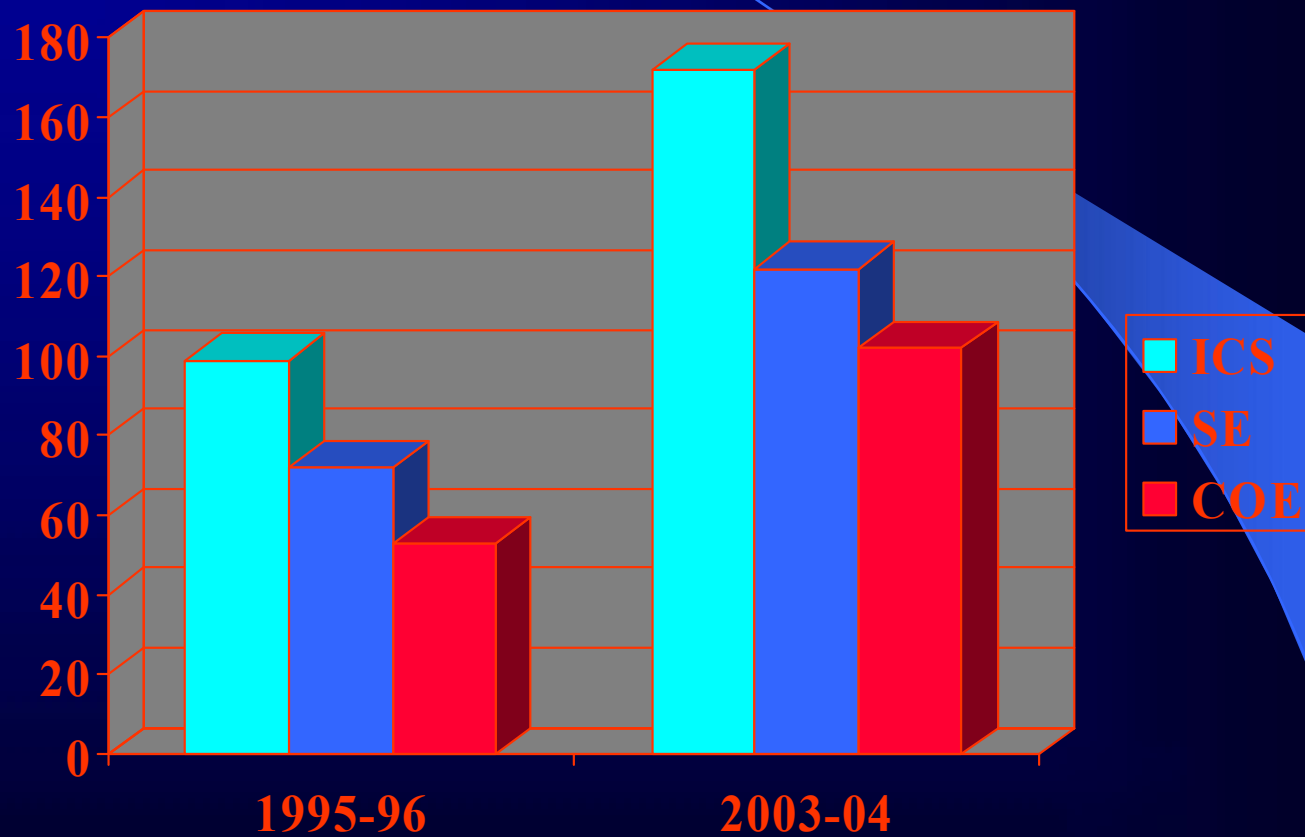


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## itions offered - Year 1995 vs. 2003



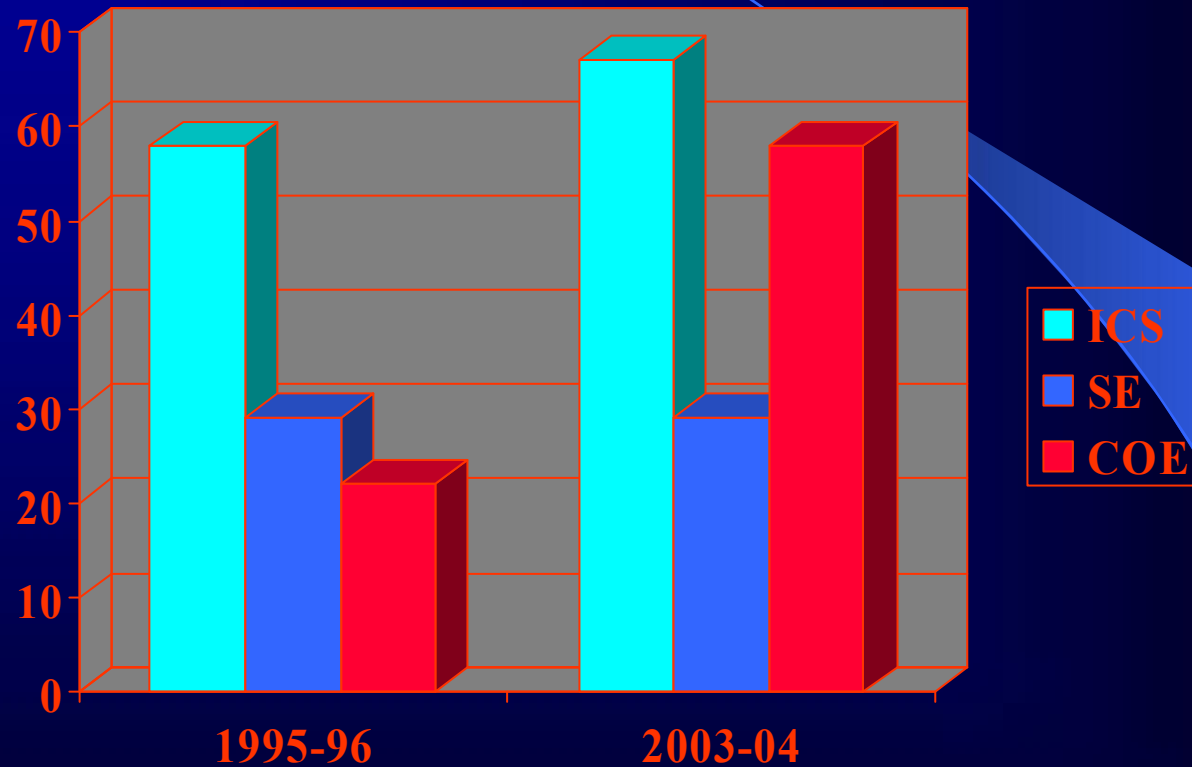


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## ns offered - Year 1995 vs. 2003



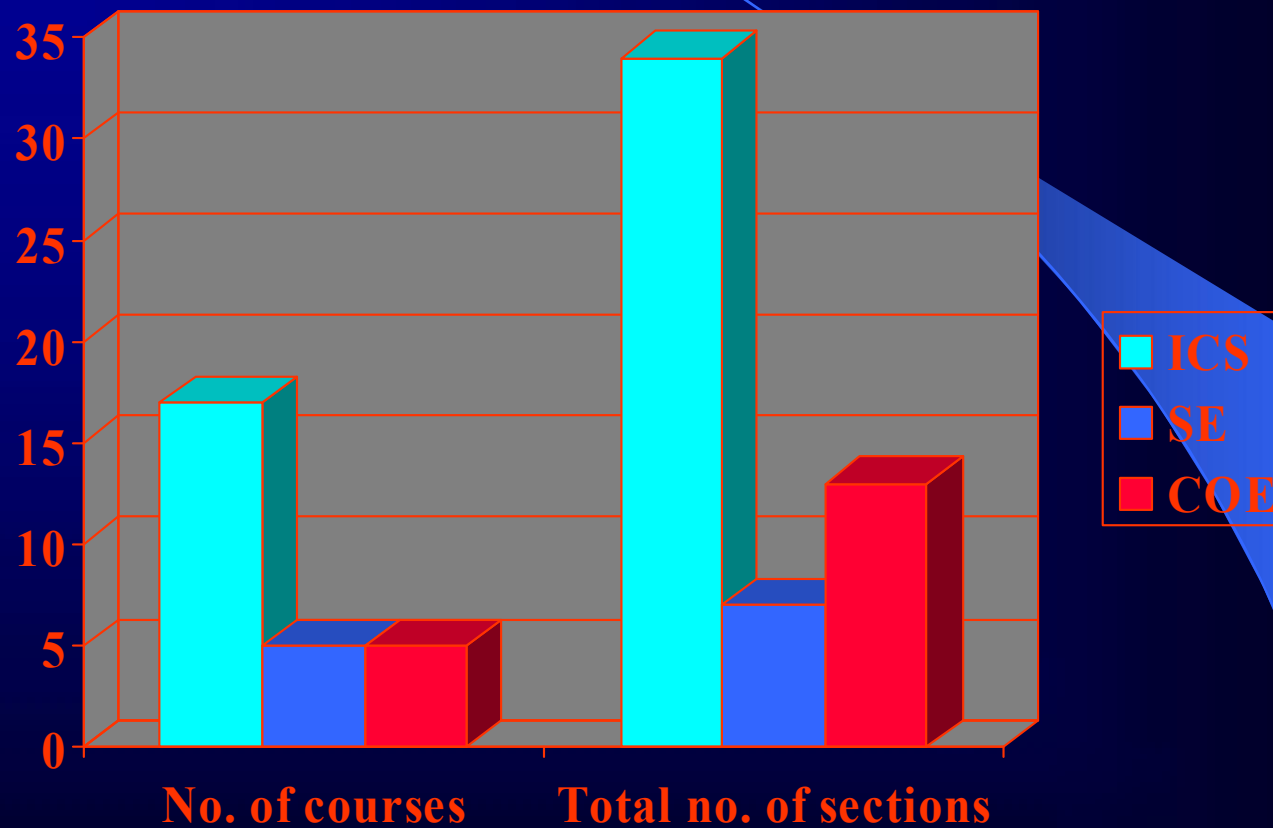


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## Sections - Year 2003 (Term 031)



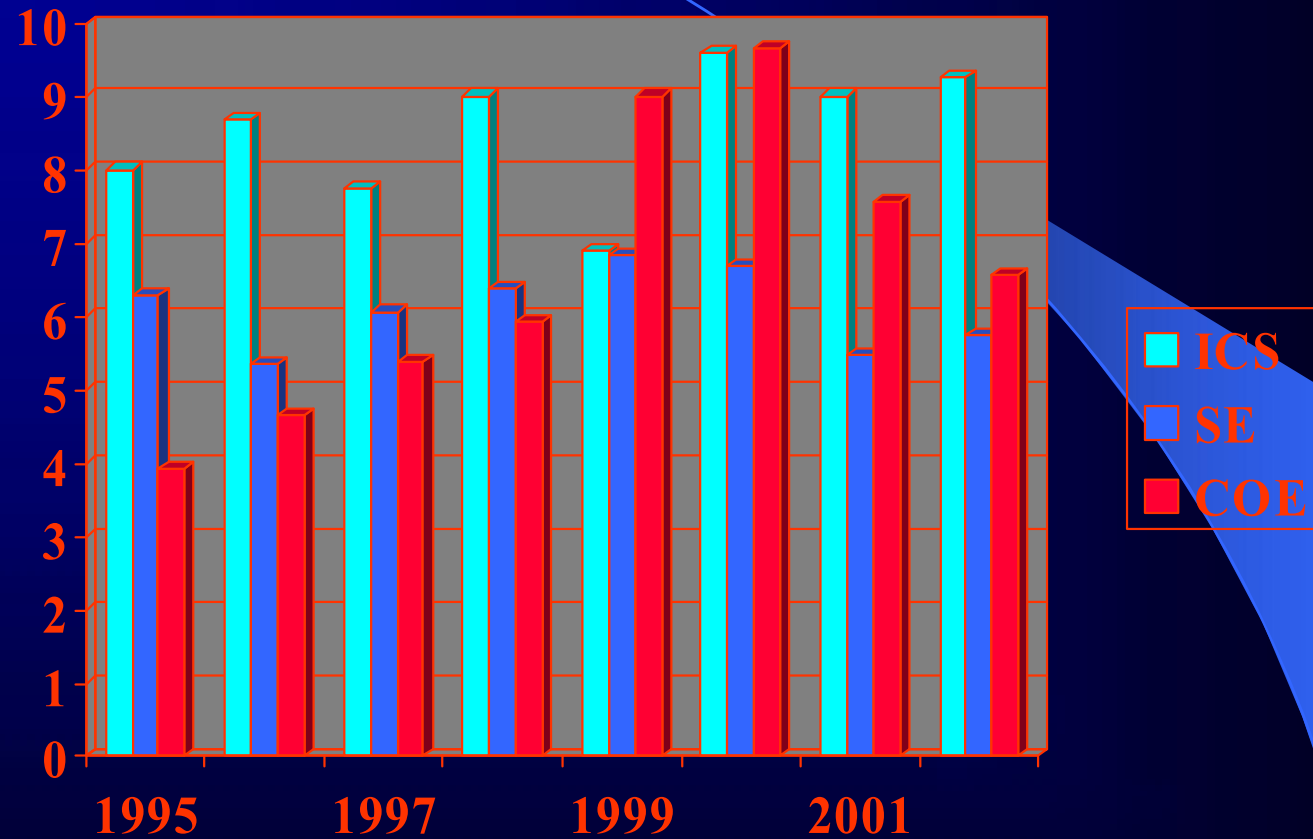


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## Section-Serviced Ratio – 1995-2003



➤ More number of sections to be served by each faculty



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# **CURRICULA REVISION**

## **Over the last 6 years**



## COE DEPT



### ❑ B. S. PROGRAM

- Reviewed by ABET – all requirements satisfied
- Self-Assessment UG Program

### ❑ M. S. PROGRAM

- Reviewed by ABET – all requirements satisfied
- MS Program Revised and Implemented
- Approval of MS Program in COE



## Direction of COE Departmental Curricula

- The department has launched a revision process, and the curriculum committee, in coordination with 5 area groups, is in the process of
  - **Revising pre-requisites**
  - **Revising catalog descriptions of some courses to avoid overlaps**
  - **Looking into recommendations of ABET/EC2000 and incorporating incremental changes to honor their suggestions**
  - **Looking into revision of elective courses**
- Shortly, a revised curriculum proposal will be submitted by the Undergraduate Curriculum Committee for discussion to the college council.
- The effort will continue to make further additions, and a major overhaul will be conducted in the next two years, and the program will run for a further two years before the next visit from the accreditation body.

# ICS DEPT



## ■ B.S. Program

- Reviewed by ABET – all requirements satisfied
- UG BS Program revised and Implemented
- Current major revision included four major tracks
  - Net-Centric Computing
  - Information Management
  - Intelligent Systems
  - Systems

## ■ M.S. Program

- MS Program with Non-Thesis option revised

## of ICS Departmental Curricula



- The main emphasis in BS CS program is on the Database, Internet and Computer Program Development.
- The Department is looking forward to incorporate specialization areas like information management, net-centric computing and AI.
- In Software Engineering the emphasis is on the Software Development following conventional and standard engineering processes.
- BS in CS program is substantially equivalent program determined by the CSAB/ABET.



## SE DEPT

### ❑ B. S. PROGRAM

- Reviewed by ABET – all requirements satisfied
- UG BS Program revised and Implemented

### ❑ M. S. PROGRAM

- MS Program Revised and Implemented



## of SE Departmental Curricula



- The department is currently working on development of two programs; one in IE, while the other in Automation/Control.
- Surveys
  - Market needs
  - International universities offering similar programs
- Aiming at strengthening the IT background in the curriculum
- The new programs will take care of weaknesses as well as building strengths in the current program.

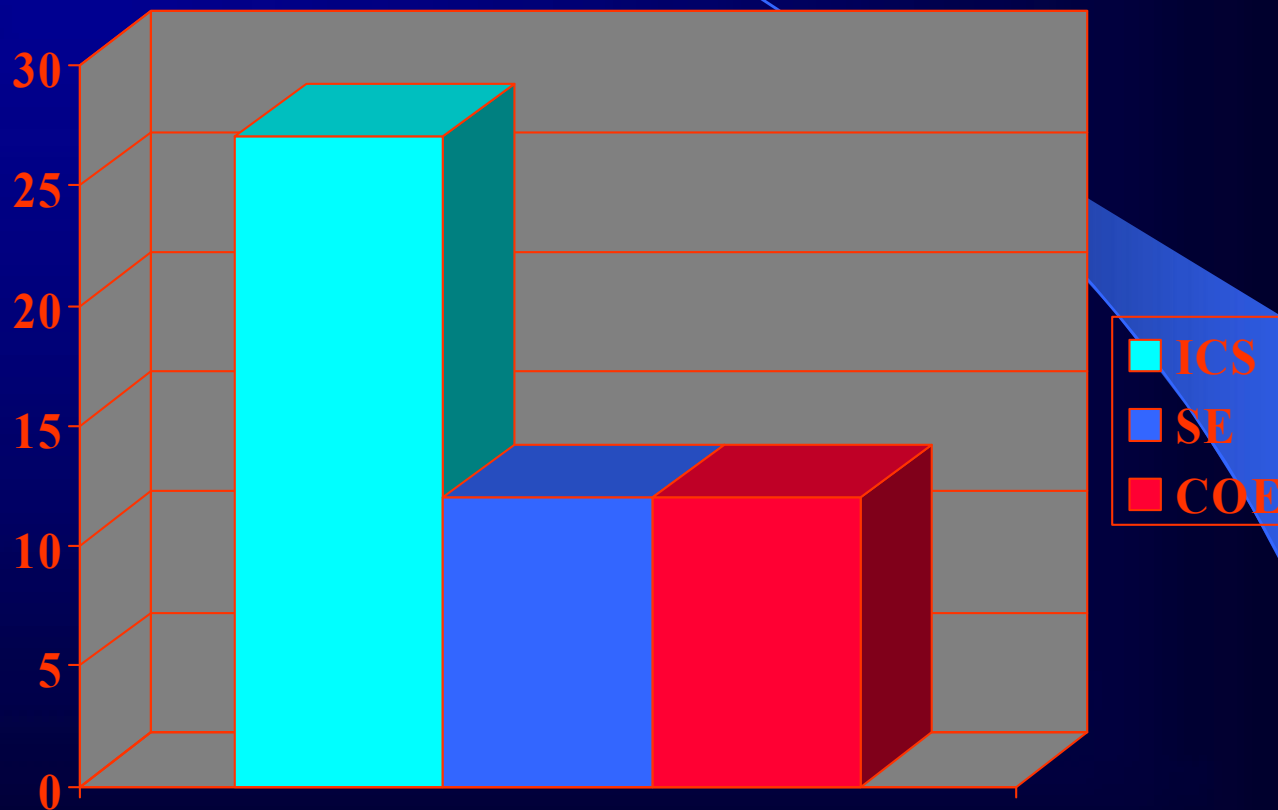


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## Fire Courses Offered - 1995 to 2003



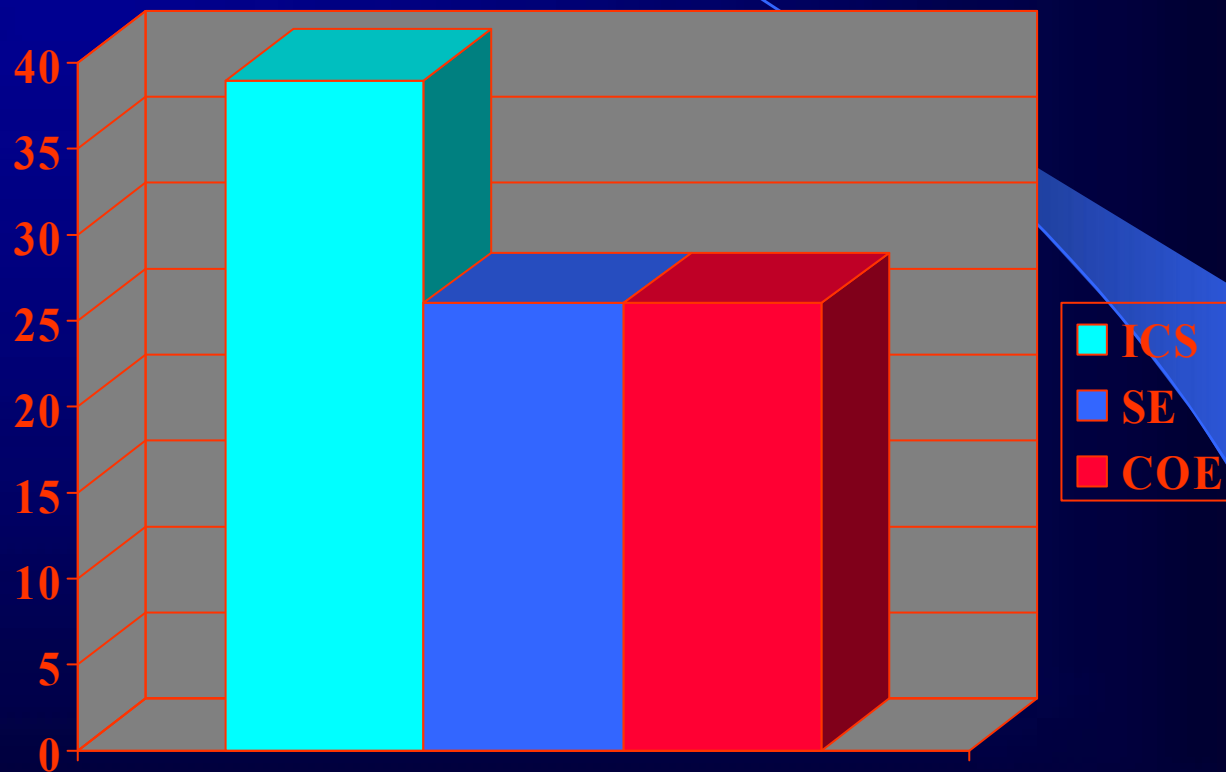


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**ffered using WebCT – Term 031**



➤ **Most of the courses are offered using WebCT**





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# CCSE Labs



## CCSE Labs

- CCSE has several general purpose and course labs.
- General purpose labs are open to students 24 hours a day on all 7 days of the week.
- Hardware and Software in Labs are upgraded regularly to keep them up-to-date.
- All the computer tables in CCSE labs have been replaced with new heavy duty tables specifically designed to optimize space.

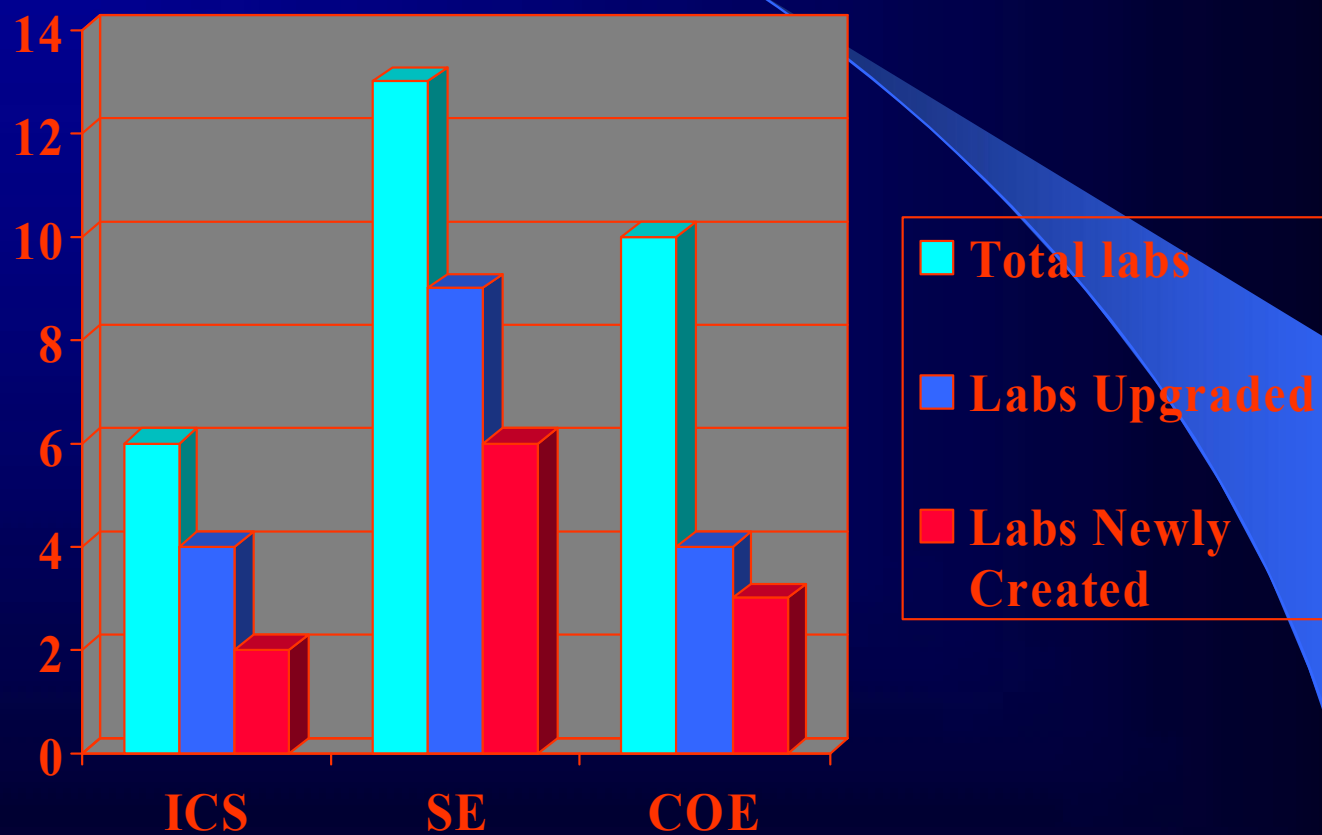


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## Upgraded/New Labs Created Year 1995 to 2003





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# Common Labs open 24 hours

- ❑ A total of 5 labs - open 24 hours
  - General purpose PC Lab : 22/335
  - General purpose PC Lab : 22/410
  - Short Course Lab : 22/333
  - Sun/Linux Lab : 22/413
  - Senior Projects Lab : 22/343



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# SWOT Analysis

How was it done ?



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# Strengths

- **Teaching**
- **Research**
- **Students**



# Teaching

- Excellent faculty, and a continuous Process of Hiring Competent International Faculty
- Practices of developing curriculum and improving courses
- Ph.D., M.Sc., and B.Sc. Programs
- Accreditation and self assessment of Programs
- Laboratories
- Smart Classrooms
- Computing Services/Networking



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# Development of Web Based On-line Courses

- ICS 102 Introduction to Computing
- ICS 201 Introduction to Computer Science
- ICS 202 Data Structure
- ICS 232/COE 205 Computer Organization and Assembly Language Programming
- COE 200 Fund. of Computer Engineering
- ICS 334 Database Systems
- ICS 353 Design & Analysis of Algorithms





# Research

- Continuous Process of Hiring Competent International Faculty with Required Specialty
- Hiring RAs, GAs, Lecturers B
- Promoting Research Groups
- Ph.D. Program
- Encouraging Faculty for Research Projects (KFUPM, SABIC, KACST, ARAMCO, etc.)
- Faculty Participation in Conferences
- Conducting Workshops
- Weekly Seminars



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# Weaknesses



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# Weaknesses

- **Teaching**
- **Research**
- **Computing Services**



# Teaching

- Need more Professorial Rank Faculty
- Too few graduate students (Especially PhDs)
- Need more Faculty Office space
- Need more Laboratories
- Need more and better Smart Classrooms
- Short Courses
- Less offerings of Elective Courses



# Research

- Too Few Professorial Rank Faculty
- Too few graduate students (Specially PhDs)
- Limited offering of Courses
- No environment to teach a course necessary for research
- Research is NOT counted as workload
- Lack of Research Laboratories
- No Plans to upgrade, expand, or guide Researchers



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# Computing Services

- Lack of Network Security Expert
- Support of increase awareness and training of new technologies
- No trouble ticketing software to handle user requests
- User Support Services need to be improved (even though performance is satisfactory)
- Problem in recruiting new Network Staff
- Lack of office and Storage space
- Heavier reliance on Microsoft products than should be.



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# Other

- Lack of sufficient support staff
- Lack of space
  - Laboratories
    - Teaching
    - Research
  - Faculty offices



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# Opportunities





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# Opportunities

- Students opportunity
- Consulting opportunity



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# Threats



# Threats

- Current Salary Structure prevents from hiring young Saudis as well as Competent Foreign Faculty (attractive salary package from other Universities in the region lures them)
- Uneven Salary Structure also frustrates competent faculty from third world
- We lose Excellent graduate students as the Package for them is NOT attractive (Industries around offer them the best salary package)
- Heavily loaded faculty in administrative work have no time for research and quality teaching
- Rapidly Changing Technology and short time to keep in pace with these new developments in order to challenge the competition within the University and outside.



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# Strategic Plan



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# Vision

To be a Center of Excellence that is recognized worldwide in education, research and professional development in the areas of Computer Sciences, Computer Engineering and Systems Engineering.



# Mission

- The Mission of the College of Computer Sciences & Engineering is:
  - To prepare competent professionals in the areas of Computer Sciences, Computer Engineering and Systems Engineering who are competitive worldwide and will be the leaders in Saudi industry, academia and government.
  - To conduct innovative basic and applied research that advances the frontiers of knowledge and address local problems.
  - To provide high quality service to society in the areas of applied projects, consultation and training.

# Objectives



1. Prepare competent qualified graduates in the areas of Computer Sciences, Computer Engineering and Systems Engineering that meet or exceed customer requirements.
2. Provide up to date current academic programs that meet international standards and satisfy market needs.
3. Provide a student focused integrated educational experience that emphasizes the role of information technology.





# Objectives

4. Build a strong, motivated and highly committed faculty community.
5. Maintain and develop a qualified pool of undergraduate and graduate students.
6. Conduct research at the frontiers of knowledge in computer sciences and engineering with emphasis on areas that serve and sustain the Kingdom's economic development.
7. Create and encourage partnership with industry, government and alumni.



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# Values

1. Quality and Creativity
2. Fairness and dignity
3. Proactive and Collaborative
4. Professional and ethical responsibility
5. Trustworthiness
6. Life long learning, growth and development
7. Good university citizenship
8. Communication



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# Objective 1

- Prepare competent qualified graduates in the areas of Computer Sciences, Computer Engineering and Systems Engineering that meet or exceed customer requirements.



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# Performance Indicators

- Alumni satisfaction
- Employer satisfaction
- Median score in outcome exams
- Median score in professional society exams



# Strategies

- Recruit the best faculty available
- Attract the best students on campus
- Identify and improve core processes such as teaching
- Update labs continuously
- Create an environment that is conducive for teaching and research



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## Objective 2

- Provide up to date current academic programs that meet international standards and satisfy market needs.



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# Performance Indicators

- Employment rate
- Curriculum currency (median time between revisions, number of new approved course per year)
- Accreditation



# Strategies

- Continuously improve curriculum, educational processes based on defined customer needs and faculty approved criteria.
- Conduct regular self-assessment
- Seek accreditation from regional and international accreditation bodies.





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## Objective 3

- Provide a student focused integrated educational experience that emphasizes the role of information technology.



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# Performance Indicators

- Student success rate
- Program completion rate
- Average class size
- Student faculty ratio
- Alumni satisfaction rate with educational experience



# Strategies

- Provide opportunities for students to interact with faculty and industry.
- Continuously update teaching and learning infrastructure to keep with the latest technology and requirements of the profession.
- Develop a plan for the use of IT in the curriculum
- Integrate information technology in the curriculum
- Develop a program for faculty to interact with organizations having a leading edge in IT.
- Keep abreast with the best practices in the use of IT in curriculum.
- Encourage students to get professional certificates in IT.



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# Objective 4

- Build a strong, motivated and highly committed faculty community.



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# Performance Indicators

- Faculty retention rate
- Faculty development programs
- Faculty recognition, incentive and awards
- Faculty satisfaction survey



# Strategies

- Attract develop and retain highly qualified and innovative faculty members.
- Strengthen the faculty body through effective recruiting and support our existing talented faculty members to achieve their full potential.
- Take an aggressive role in faculty motivation.
- Assess and meet faculty needs.



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# Objective 5

- Maintain and develop a qualified pool of undergraduate and graduate students.



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# Performance Indicators

- Median RAM II score
- Median RAM I score
- Median high school percentage for students joining the college
- Percentage of honors students.





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# Strategies

- Actively recruit the highest quality students
- Improve students counseling and advising



## Objective 6

- Conduct research at the frontiers of knowledge in computer sciences and engineering with emphasis on areas that serve and sustain the Kingdom's economic development.



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# Performance Indicators

- Journal publication index
- Conference publication index
- Research grant/Projects
- Patents/recognition/award index  
calculated at the college level

# Strategies



- Identify and focus on few areas of excellence
- Promote collaborative research and support cross-disciplinary faculty research and seminars
- Support attendance of conferences and workshops
- Continue to improve research infrastructure
- Promote mentoring among faculty members
- Create partnerships with leading institutes that are known for research.



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# Objective 7

- Create and encourage partnership with industry, government and alumni



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# Performance Indicators

- Contract signed
- Workshops
- Short courses
- Funded projects



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# Strategies

- Create alliances with key industries
- Outreach to alumni for effective feedback and support.



# Implementation



- Develop yearly goals (targets) based on the current status of each objective as reflected by the key performance indicators.
- For each target establish a set of action plans to be implemented during the course of the year.
- Assess the status at the end of the year in a management review and develop a set of action plans for the next year.
- Continue the above steps on yearly basis.





# Concerns

- Unified guidelines and their effect pertaining to selection of thesis committees, etc.
- Computer Utilization Allowance Committee criteria
- Research committee role, support, and its effect on academic department



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# Conclusion



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# Discussion