

Analysis of Computer Science based graduation Thesis in Turkey

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Graduate Studies in Turkey

- The aim of this study to analyze the master and doctorate thesis submitted to YOK (Turkish Council of Higher Education) in computer science in details according to the type, university and subject.
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- According to National Thesis Center of YOK (<https://tez.yok.gov.tr/UlusalTezMerkezi/giris.jsp>) first graduate study was completed in **1900 as Specialization in Medicine.**

Graduate Studies (Classification)

- Master
- Doctorate
- Specialization in Medicine
- Proficiency in Art
- Specialization in Dentistry
- Minor Specialization in Medicine

Numbers-Statistics-Graduate Studies

- Between 1900 and September 2019, **549.127** graduate studies
- Master Studies: 383.049
- Doctorate Studies: 100.444
- Specialization in Medicine: 62.133
- Proficiency in Art: 1.697
- Specialization in Dentistry: 1.060
- Minor Specialization in Medicine: 744
- **Total: 549.127**

206 Universities-TURKEY--549.127 graduate studies (The first 10 universities)

İstanbul Üniversitesi	34.611
Gazi Üniversitesi	32.430
Marmara Üniversitesi	30.135
Ankara Üniversitesi	28.634
Orta Doğu Teknik Üniversitesi (Middle East Technical University-METU)	22.935
İstanbul Teknik Üniversitesi	22.629
Hacettepe Üniversitesi	21.007
Ege Üniversitesi	18.247
Dokuz Eylül Üniversitesi	17.654
Selçuk Üniversitesi	15.627

Total: 243.909

Total in Turkey: 549.127

$243.909 \div 549.127 = 45\%$

206 Universities-TURKEY--549.127 graduate studies (The last 15 universities)

Ankara Medipol Üniversitesi	0
Canik Başarı Üniversitesi	0
Demirođlu Bilim Üniversitesi	0
Gaziantep Bilim ve Teknoloji Üniversitesi	0
Hakkari Üniversitesi	0
İpek Üniversitesi	0
İstanbul Atlas Üniversitesi	0
İstanbul Rumeli Üniversitesi	0
İzmir Demokrasi Üniversitesi	0
İzmir Tınaztepe Üniversitesi	0
Jandarma ve Sahil Güvenlik Akademisi	0
Kahramanmaraş İstiklal Üniversitesi	0
Samsun Üniversitesi	0
Semer kand Bilim ve Medeniyet Üniversitesi	0
Sivas Bilim ve Teknoloji Üniversitesi	0

Computer Engineering Sciences-Computer and Control

- Master Studies: 10.439
- Doctorate Studies: 1.876
- Total: 12.315

It is only $10.439 / 383,049 = 3\%$ of the whole master studies

only $1876 / 100,044 = 2\%$ of the whole doctorate studies

Divisions (19)

- Computer (44 master, 0 doctorate)
- Computer Sciences (105 master, 16 doctorate)
- **Computer Sciences and Engineering (230 master, 39 doctorate)**
- Computer Education (75 master, 0 doctorate)

Divisions Continues

- Computer Graphics (4 master, 0 doctorate)
- Computer Engineering (4618 master, 804 doctorate)
- Computer Systems Education (16 master, 0 doctorate)
- Computer and Information Engineering (118 master, 32 doctorate)
- Computer and Instruction Technologies (77 master, 20 doctorate)
- Computer and Instruction Technologies Education (837 master, 267 doctorate)
- Computer Software (11 master, 1 doctorate)

Divisions Continues

- Information Systems (134 master, 60 doctorate)
- Information Systems Engineering (23 master, 0 doctorate)
- Information Technologies (50 master, 0 doctorate)
- Information Technologies Engineering (10 master, 0 doctorate)

Divisions Continues

- Information Applications (40 master, 1 doctorate)
- Information Applications Engineering (0 master, 0 doctorate)
- Information Security Engineering (21 master, 1 doctorate)
- Information Technologies (186 master, 0 doctorate)

Not Included Divisions

- Computer Aided Design, Manufacturing and Programming – Manufacturing Engineering, Metallurgy Engineering
- Art and Design in Computer Environment—Fine Art Faculty
- Bioinformatics—Health Science Faculty
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FOR DIVISION OF COMPUTER RELATED;

- **FINDING:**

- Computer Engineering division (4.618 master, 804 doctorate) has the highest numbers of completed master and graduate studies-thesis

For master; $4.618/10.439 = 44\%$

For doctorate; $804/1.876 = 43\%$

The other engineering divisions have also some roles

Suggestion: Either other divisions should be much more active or they should be combined with Computer Engineering division

Inter-Disciplines--- Master + Doctorate = 1136

- Electrical and Computer (10 master, 0 doctorate)
- Electrical and Computer Engineering (181 master, 8 doctora)
- Electrical Electronics and Computer Engineering (30 master, 13 doctora)
- Electronics and Computer Engineering (30 master, 13 doctorate)
- Electronics and Computer Systems (10 master, 0 doctorate)
- Electronics and Computer Systems Education (92 master, 13 doctorate)
- Electronics-Computer (25 master, 0 doctorate)
- Electronics-Computer Education (580 master, 131 doctorate)

Electrical Electronics Engineering

- Master Studies: 13.757
- Doctorate Studies: 2782
- Total: 16.541

Inter Discipline / Main Department = $1.136 \div 16.541 = 7\%$

UNIVERSITIES—COMPUTER ENGINEERING MASTER + DOCTORATE

İstanbul Üniversitesi	139
Gazi Üniversitesi	133
Marmara Üniversitesi	62
Ankara Üniversitesi	62
Orta Doğu Teknik Üniversitesi	290
İstanbul Teknik Üniversitesi	372
Hacettepe Üniversitesi	139
Ege Üniversitesi	212
Dokuz Eylül Üniversitesi	170
Selçuk Üniversitesi	157

Total: 1.736

Total in Turkey: 5.422

$1.736 \div 5.422 = 32\%$

Fields

- Cryptography —41 master 9 doctorate
- Database --- 371 master 52 doctorate
- Machine Learning – 204 master 78 doctorate
- Software related —1314 master 196 doctorate
- Hardware related – 8 master 1 doctorate
- Artificial Intelligence —168 master 84 doctorate
- Data Structure – 20 master 5 doctorate

Fields Continues

- Image Processing --- 37 master 5 doctorate
- Robotic --- 219 master 39 doctorate
- Embedded System --- 67 master 5 doctorate
- Computer Architecture --- 3 master 0 doctorate
- Data Mining --- 499 master 92 doctorate

CONCLUSION

- Most of Divisions were newly formed and they have lack of academics thus less number of master studies and even no doctoral studies.
- Instead of letting these divisions be formed the academics should be directed or employed in main engineering divisions
- Computer Instruction Technology Education division is an exception since this division is main department that exists in Education Facult and serve the society to grow the teachers.
- Bilateral Agreement, R&D based projects cooperation and any kind of scientific cooperation can easily be signed with top 10 list of YOK graduate studies database.

CONCLUSION CONTINUES

- Turkish universities must have been clustered with respect to topics-fields they focused to cooperate to have better results.
- In some fields such as software, data mining and machine learning the qualities of the study must increase by forming new cooperation with other national universities and also foreign universities.
- Totally 71 of 206 universities in Turkey is private universities and some of them must push academic progress and achievements and must have significant contribution to the graduate studies.

- Thank you for listening