



电子科技大学  
University of Electronic Science and Technology of China

# School of Mathematical Sciences

University of Electronic Science and Technology of China

Chengdu, Sichuan, P. R. China



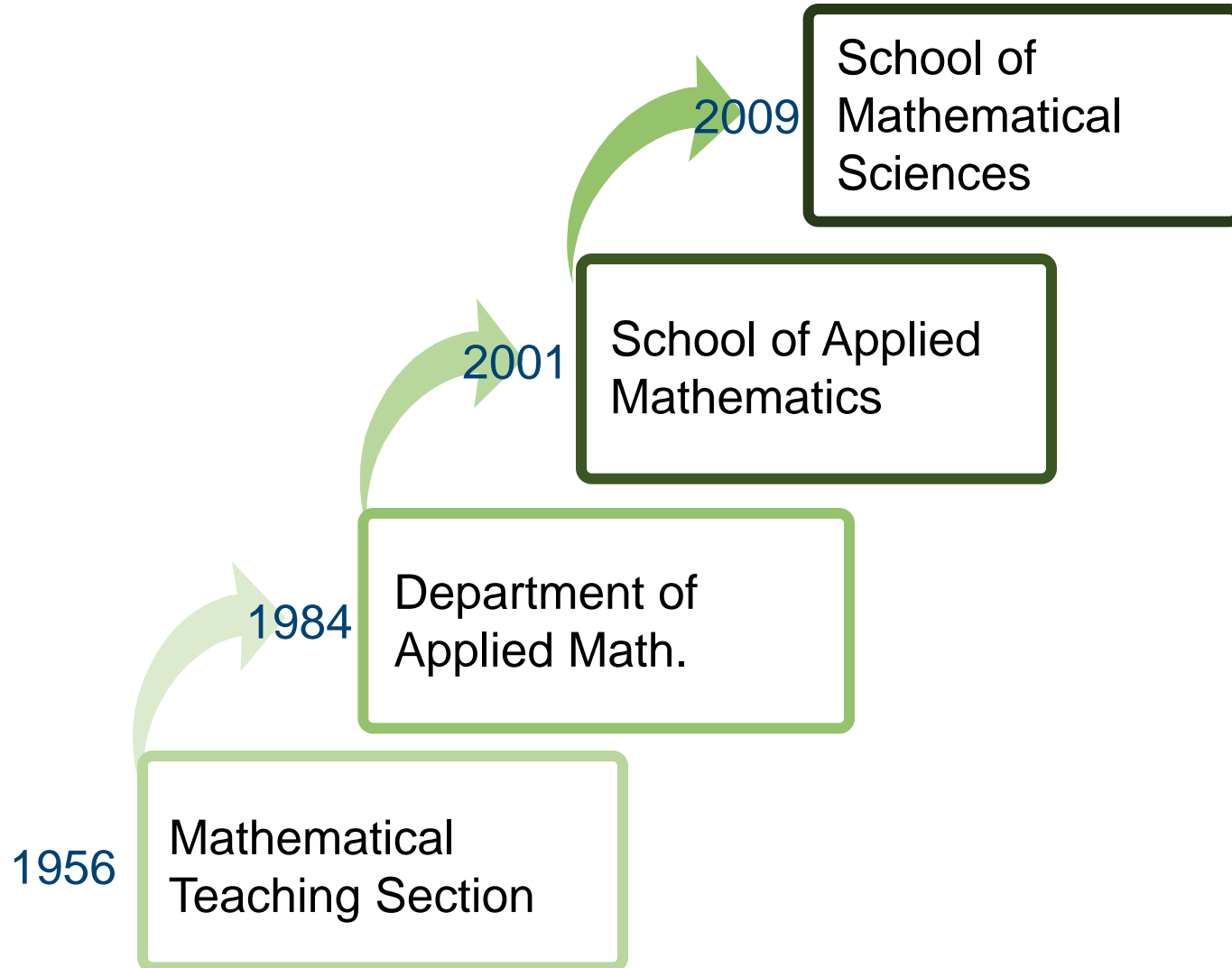
# Contents



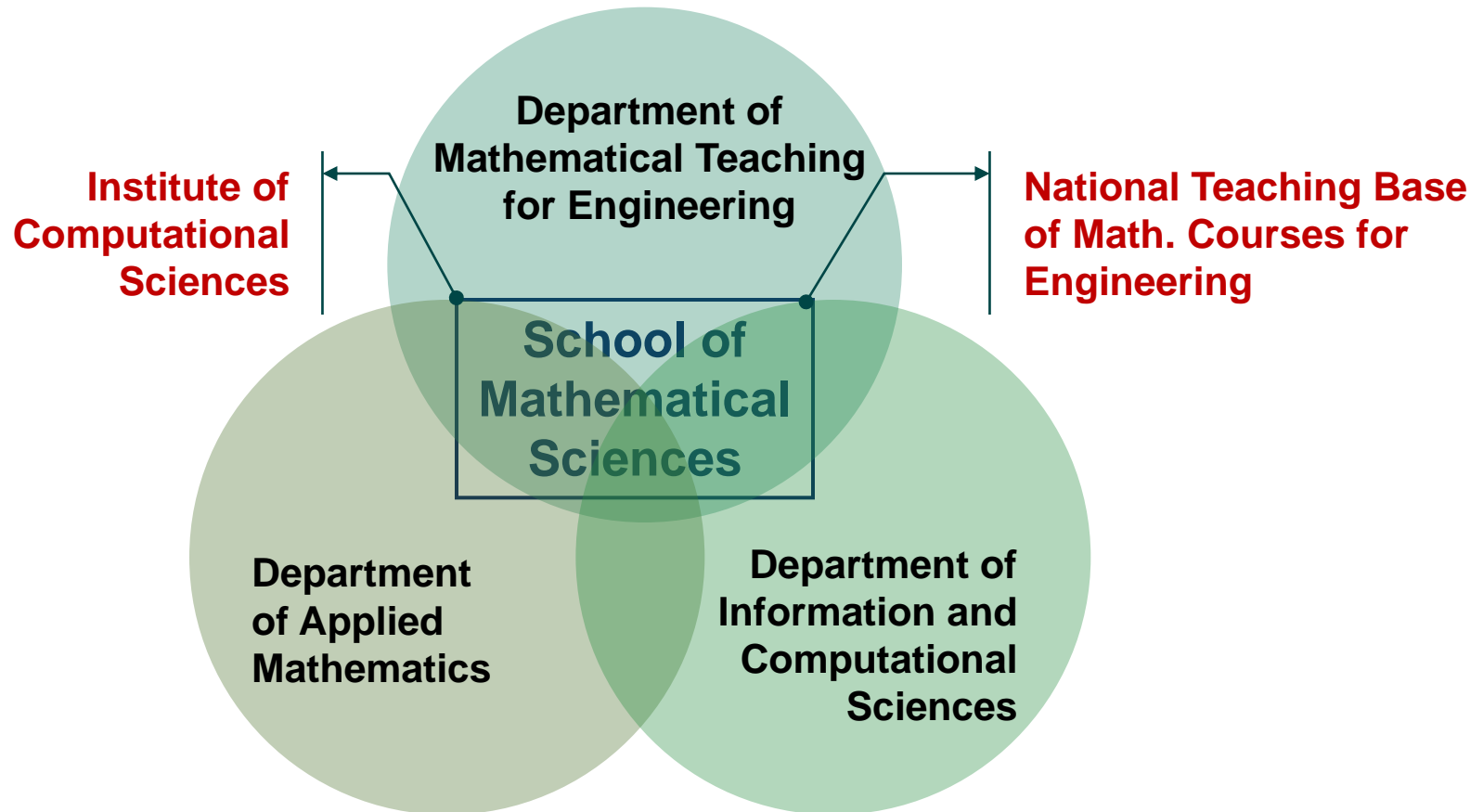
- **History and Introduction**
- **Main Research Groups**
- **Undergraduate Education**
- **Master and Ph. D. Programs**



# History



# Introduction



# Introduction

## Majors for Undergraduate Students

- ◆ Pure and Applied Mathematics
- ◆ Information and Computational Sciences

## Master Degree                      Mathematics

including:

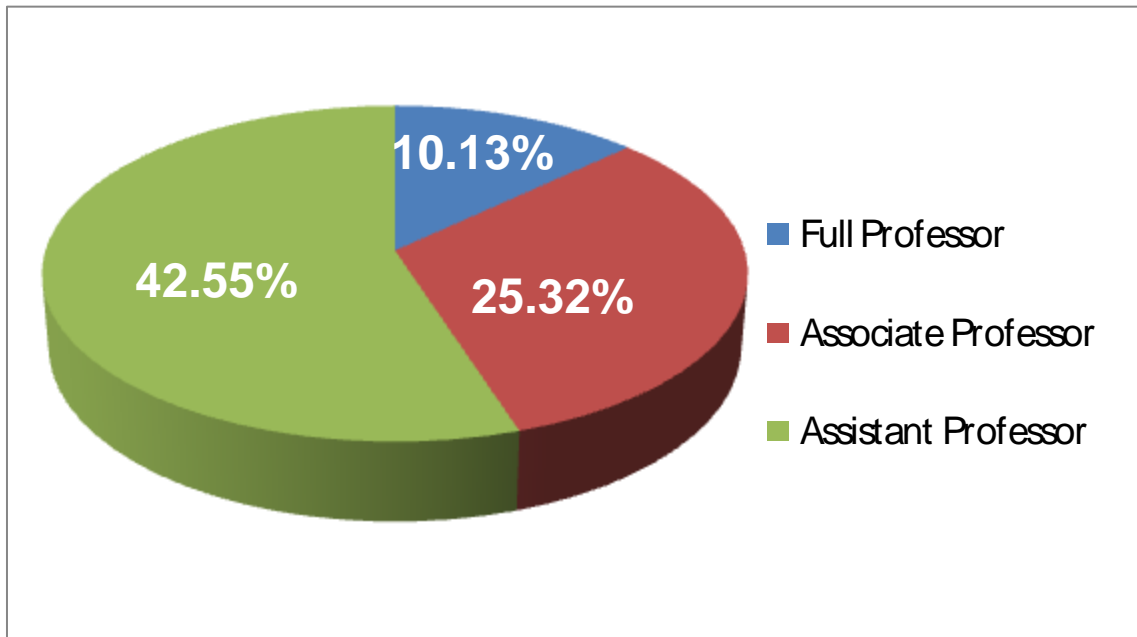
Computational Math., Applied Math., Pure Math., Probability,  
Operational Research and Control Theory

## Ph.D. Degree                      Mathematics

Key Discipline in Sichuan Province : **Mathematics**

# Introduction

## Teaching Staff



# Research Groups



- **Numerical Lin. Alg. and Scientific Computing  
(and Matrix Analysis)**
- **Numerical Solutions of PDE / BIE and Appl.**
- **Dynamical Systems and Control Theory**
- **PDE Theory**
- **Stochastic Analysis and Uncertainty Math.  
Theory**



# Numerical Lin. Alg. and Scientific Computing



- Iterative solutions for large linear systems
- Preconditioning techniques
- Saddle point problems
- Matrix analysis
- **Applications:**
  - Computational electromagnetics;
  - Image process;
  - Markov chains computation

Prof. Ting-Zhu Huang  
 Prof. Yan-Fei Jing  
 Dr. Liang Li  
 Prof. Hou-Biao Li  
 Prof. Yong Zhang  
 Prof. Guang-Hui Cheng

## Intern. Cooperation with:

- Prof. D.J. Evans, Loughborough University, UK
- Prof. Z.-Y. Liu, Univ. of Minnesota, US
- Dr. Carpentieri Bruno, Univ. of Groningen, Netherland
- Prof. F.J. Hall, Georgia State University, US
- Prof. Z.-S. Li, Georgia State University, US
- Prof. Tomohiro Sogabe, Aichi Prefectural Univ., JP
- Prof. C.J. Li, Leeds Univ., UK

## Publications in:

SIAM J. Matrix Anal. Appl.,  
 J. Comput. Phys., IEEE Trans.,  
 Numer. Lin. Alg. Appl.,  
 Automatica, Computing,  
 Lin. Alg. Appl., PLA,  
 Prog. Electromag. Res.,  
 Computer Phys. Comm.,  
 J. Electromag. Waves Appl., .....

## ➤ Many Projects:

National Key Basic  
 Research Program,  
 NSFC,  
 .....,  
 et al.

## ➤ 5 Awards:

Sci. and Tech.  
 Awards granted  
 by ministry or  
 province



# Numerical Solutions of PDE / BIE and Appl.

- High-dimensional boundary integral equations
- Singular integraltion
- Domain decomposition
- Parallel algorithms
- Numerical solutions of PDE
- **Applications:** Computational electromagnetics

Prof. Jin Huang,  
Prof. Yong Duan,  
Prof. Guo-Liang He,  
Dr. Zhi-Liang Deng,  
Dr. Zhi-Yong Wang,  
Dr. Hui Zhang

## Intern. Cooperation with:

- Prof. Alexander H.D.Cheng, Mississippi University
- Dr. X.-M He, Missouri Univ. of Science and Tech.
- Prof. Z.-Y. Liu, University of Minnesota
- Prof. Z.-C Li, National Sun Yat-sen University
- Prof. Ahmed Naji, Morocco

Publications in:  
SIAM J.SCI. Comput.,  
Adv. Comput .Math.,  
Eng. Anal. Bound. Elem.,  
Appl. Num. Math.

➤ Second Prize of  
Natural Science  
and Technology  
granted by Ministry  
of Education

➤ Supported  
by NSFC



# Dynamical Systems and Control Theory

- **Stability theory**
- **Neural network**
- **Multi-agent systems**

**Prof. Shou-Ming Zhong**  
**Prof. Yi Wang**  
**Dr. Jin-Liang Shao,**  
**Dr. Jun-Yan Yu,**  
**Dr. Qi Lv,**  
**Dr. Jia-Li Yu**

**Publications in:**  
**Automatica**  
**IEEE Trans. ,**  
**Int. J. Control**  
**Fuzzy Sets and System,**  
**.....**

## **Intern. Cooperation with:**

- **Prof. X.-Z Liu, Waterloo University**
- **KFUPM Chair Prof. Ravi. P. Agarwal, Florida Institute of Technology and King Fahd University of Petroleum & Minerals**
- **Prof. Syamal. K. Sen, Associate editor of Computer Science and Informatics, Neural, Parallel & Scientific Computation, et al.**

➤ **Supported  
by NSFC: 4**



# PDE Theory

- Klein-Gordon equations
- Schrödinger equations
- Inverse problems

Prof. Zhao-Yin Xiang  
Prof. Yao-Bin Ou  
Prof. Yin Wang  
Dr. Fang-Fang Dou  
Dr. Ming-Gang Fei  
Dr. Mei Ming  
Dr. Chun-He Li

Publications in:

J. de Mathématiques Pures et Appliqués  
Inverse problems  
JDE  
Z. Angew. Math. Phy.  
Math. Meth. Appl. Sci.

.....

**Intern. Cooperation with:**

- Prof. Paula Cerejeiras, University of Aveiro
- Prof. Uwe Kaehler, University of Aveiro
- Prof. Christopher D. Sogge, Johns Hopkins University

➤ **Supported  
by NSFC: 6**



# Stochastic Analysis and Uncertainty

- Applied Probability
- Insurance Math.
- Fuzzy Math.
- Fuzzy Sets

Prof. Ding-Cheng Wang  
Prof. Lan Shu  
Prof./Dr. Shao-Gang Chen  
Prof. Quan-Zhi Xu  
Prof. De-An Wu  
Dr. Jiang-Yan Peng

## Intern. Cooperation with:

- Prof. Takagi Wise, University of Tsukuba, Japan
- Prof. Chris Heyde, The Australian National University

## Publications in:

Adv. Appl. Probability  
Information Science  
Fuzzy Sets and Systems  
Stoch. Mod.,  
Stat. Prob. Lett.

➤ Third Prize of  
Provincial Science  
and Technology  
Progress

➤ Supported  
by NSFC: 5



# Undergraduate Education--Math. Major

- **Pure and Applied Mathematics (National Level)**

Feature: Training complex-type students who can work on pure and applied mathematics and computer sciences.

- **Information and Computational Sciences (Provincial Level)**

Feature: Training complex-type students who can apply mathematics and computer to work on information and computational sciences

Base on: **Mathematics**

Ability of:

**Mathematical modeling**  
**Programming and applying computer**  
**Scientific computing**

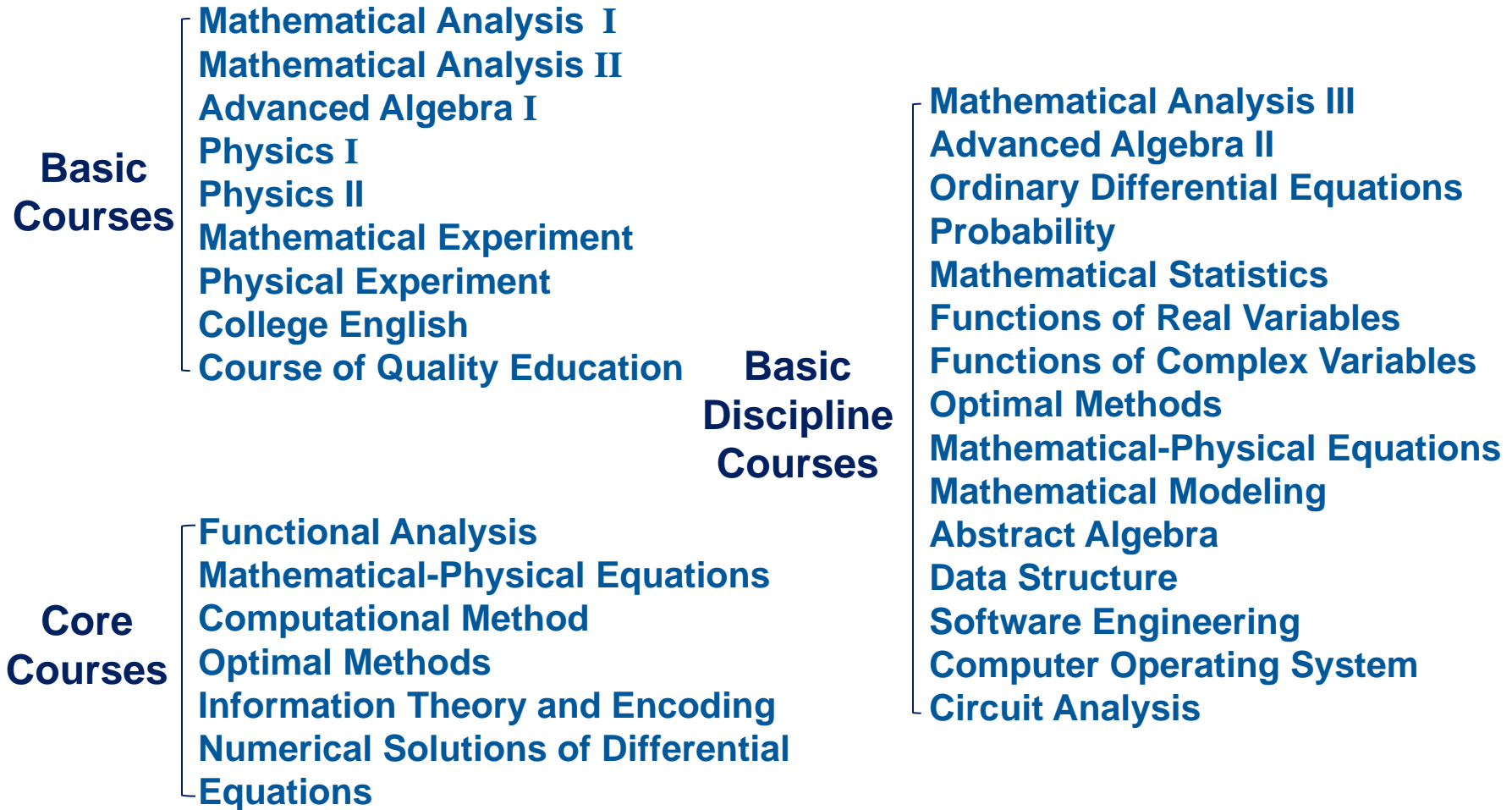
Joint with:

**Computer sciences**  
**Information and electronic discipline**  
**Financial mathematics**

Directions for:

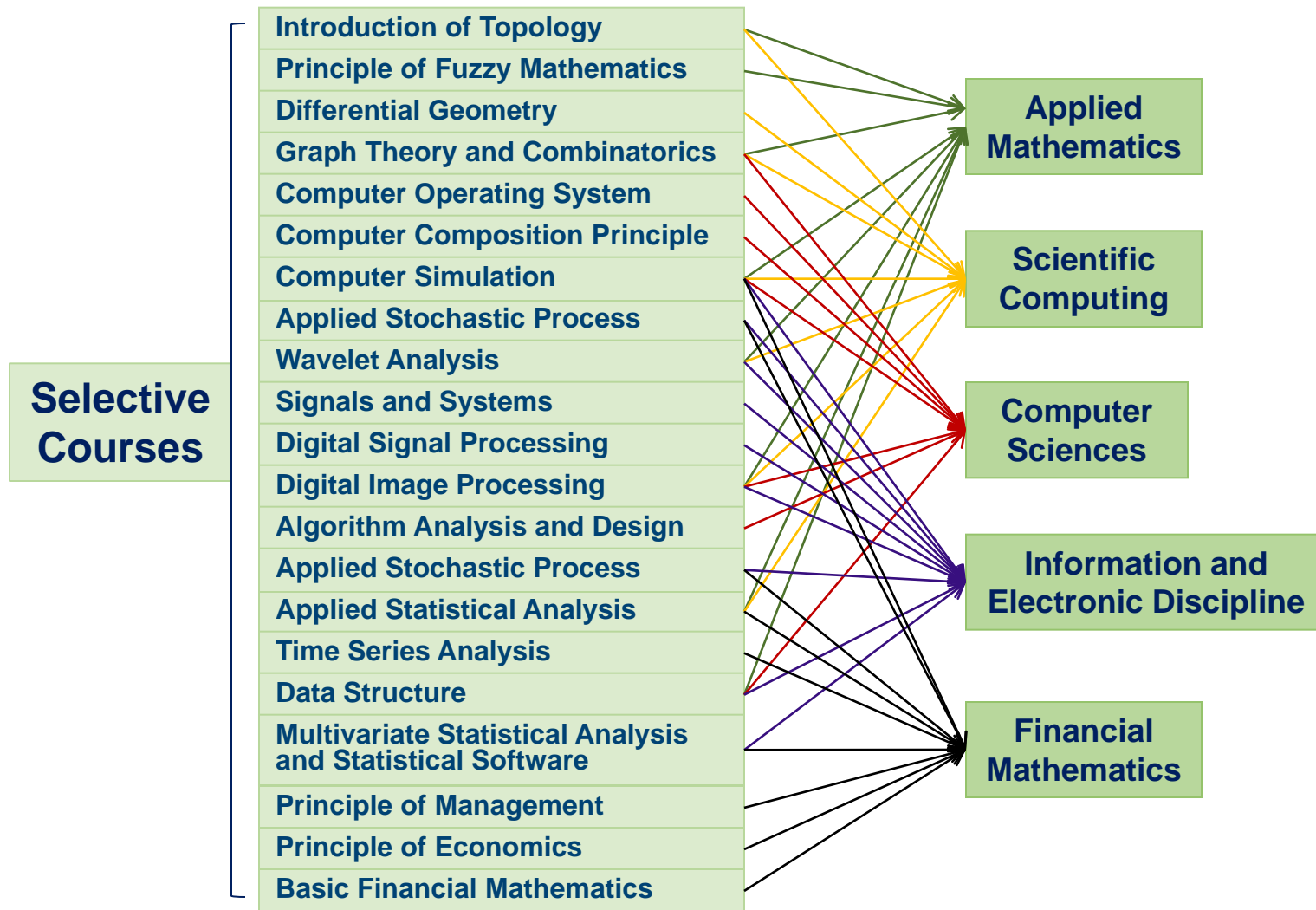
**Mathematics computer sciences**  
**Information and electronic discipline**  
**Financial mathematics**

# Undergraduate Education---Math. Major





# Undergraduate Education---Math. Major



## Training Program

### Four-Year “Training Program for Undergraduate Students”

#### Study

The first, second and third semesters  
“Mathematical Analysis”、  
“Advanced Algebra”、  
“Analytic Geometry” and  
“Numerical Analysis”

#### Research Preparation

The fourth semester  
Choosing tutors and preparing corresponding materials

#### Research Practice

The fifth and sixth semesters  
Following the tutors to finish 1-2 short research papers and reports

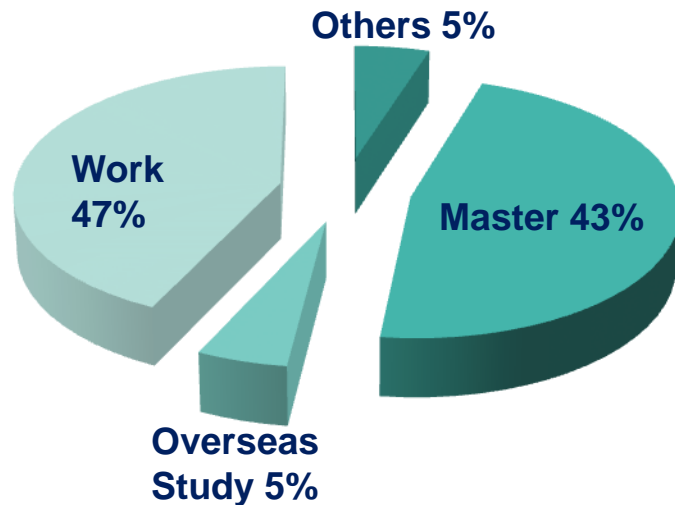
#### Research Practice + Undergraduate thesis

The seventh and eighth semesters  
Joining in tutors’ research and finishing undergraduate thesis



# Undergraduate Education---Math. Major

## Posts After Graduation



Undergraduates [2009 --- 2010]

## Overseas study

For example:

Oxford

University of Maryland

Univ. of Minnesota

Wayne State University

Texas Tech. University

University of Pittsburgh

University of Louisiana at Lafayette

University of Glasgow

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# Typical Publications of Undergraduate Students

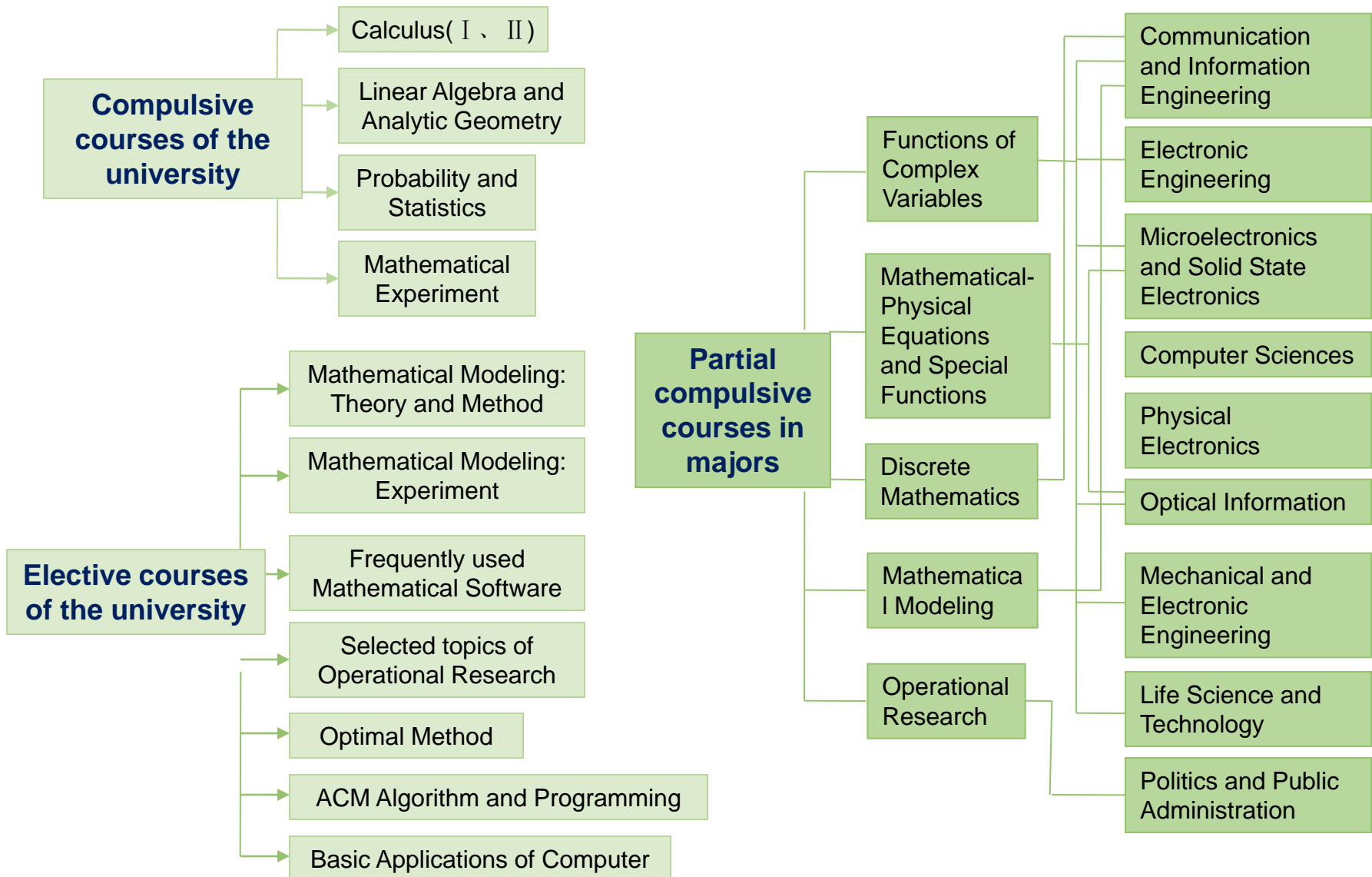
Name	Papers	Journals or publishers	Time
Yang, Shiming	A note on estimates for the spectral radius of nonnegative matrices	<b>Electr. J. Lin. Alg.</b>	Vol.13, 2005 (SCI)
Wang, Lin	Improving bounds for eigenvalues of complex matrices using traces	<b>Lin. Alg. Appl.</b>	Vol.426, Iss. 2-3, 2007, 841-854 (SCI)
Wang, Lin	Some lower bounds for the spectral radius of matrices using traces	<b>Lin. Alg. Appl.</b>	Vol.432, Iss. 4, 2010, 1007-1016 (SCI)
Tang, Pingfan	Coupling projection domain decomposition method and Kansa's method in electrostatic problems	<b>Comput. Phy. Comm.</b>	180(2009) 209-214 (SCI)
Tang, Pingfan	A novel domain decomposition method for highly oscillating partial differential equations	<b>Eng. Anal. Boundary Elements</b>	Vol. 33, Issue 11, 2009, 1284-1288 (SCI)
Wen, Chengming	A modified algorithm for the Perron root of a nonnegative matrix	<b>Appl. Math. Comput.</b>	Vol. 217, Issue 9, 2011, 4453-4458 (SCI)
Liu, Jinni	A modified algorithm to construct diagonally dominant preconditioners	<b>J. Comput. Info. Systems</b>	2009, No.4 (EI)
Wan, Lei etc.	The manufacturing of composite flocculant PAFC-ST-AM and the experiment of its P-removal-rate for simulation wastewater	<b>Advance in Chemical</b>	2010.09
Li, Chao	An algorithm of the inverse of tridiagonal and pentadiagonal Toeplitz matrices	<b>Pure and Appl. Math.</b>	accepted
Zhu, Tianfei etc.	Three reconstruction model of vascular	<b>Journal of UESTC</b>	2003, NO.05
Ren, Zhigang	The estimate of Perron Complement and Perron root of nonnegative matrices	<b>College Mathematics</b>	2006, 22(1): 87-89

# Typical Research Grants for Undergraduate Students

Name	Grant Categories	Project Titles
Liao, Hongshu, Zhao, Tao and Yang, Daxuan	<b>National Innovation Experiment project for Undergraduate students</b>	Online evaluation system of distributed programming
Li, Fan	<b>Research Grant of Chinese Central College(for students)</b>	The study of the correlation value of corporate and breach of contract
Yan, Guoxi	<b>Research Grant of Chinese Central College(for students)</b>	A procedure evaluation system based on multi build environment
Yang, Kunhai	<b>Research Grant of Chinese Central College(for students)</b>	Online training platform based on Linux programming
Liao, Shuhao	<b>Innovation Grant of UESTC</b>	The application of Krylov subspace method in Electromagnetic Computing
Song, Zhida and Qin, Wenhui	<b>Innovation Grant of UESTC</b>	Study of Algorithm of Quadratic eigenvalue problem and its applications
Yang, Guangxu and Quan, Tianchan	<b>Innovation Grant of UESTC</b>	Functional design of Sudoku Game and algorithm study
Hu, Xiusong and Chen, Ziyu	<b>Innovation Grant of UESTC</b>	The best geometric approximation of Target information
Wen, Zhang, Yan, Guoxi and Meng, Shuling	<b>Innovation Grant of UESTC</b>	The study of efficient generation algorithm of Three-dimensional unstructured grid
Xu, Guangli and Feng, Zhihao	<b>Innovation Grant of UESTC</b>	The voiceprint extraction and realization on android based on fractal noise
Zhang, Jian and Wang, Xiaochuan	<b>Innovation Grant of UESTC</b>	The study and analysis on prohibiting the vehicles turning left at the crossroads
Tao, Bo and Yin, Shi	<b>Innovation Grant of UESTC</b>	Numerical feature of matrix and its ILU decomposition
Wang, Xin	<b>Innovation Grant of UESTC</b>	The study based on Binocular vision targeting and its tracking technology
Zeng, Pingping and Zheng, Yuanming	<b>Innovation Grant of UESTC</b>	The study of Meshless Method of Maxwell equations
Bo, Yiming and Chen, Dandan	<b>Innovation Grant of UESTC</b>	The study of better preconditioner of linear systems
Wang, Xiaochuan	<b>Innovation Grant of UESTC</b>	The existence of Global optimal solution of one special kind of elastic membrane on the disc

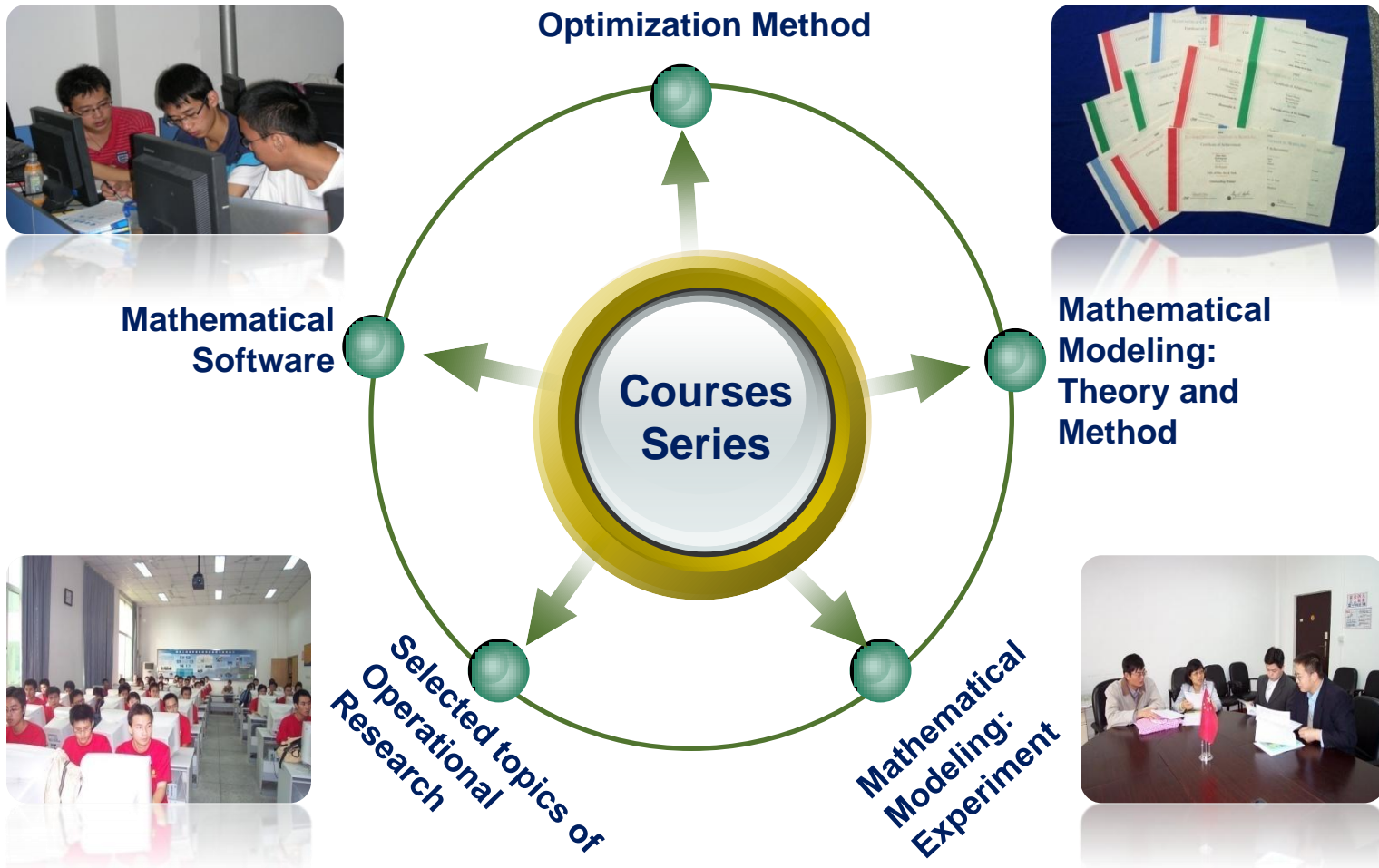


# Undergraduate Education---- Non-Math. Majors

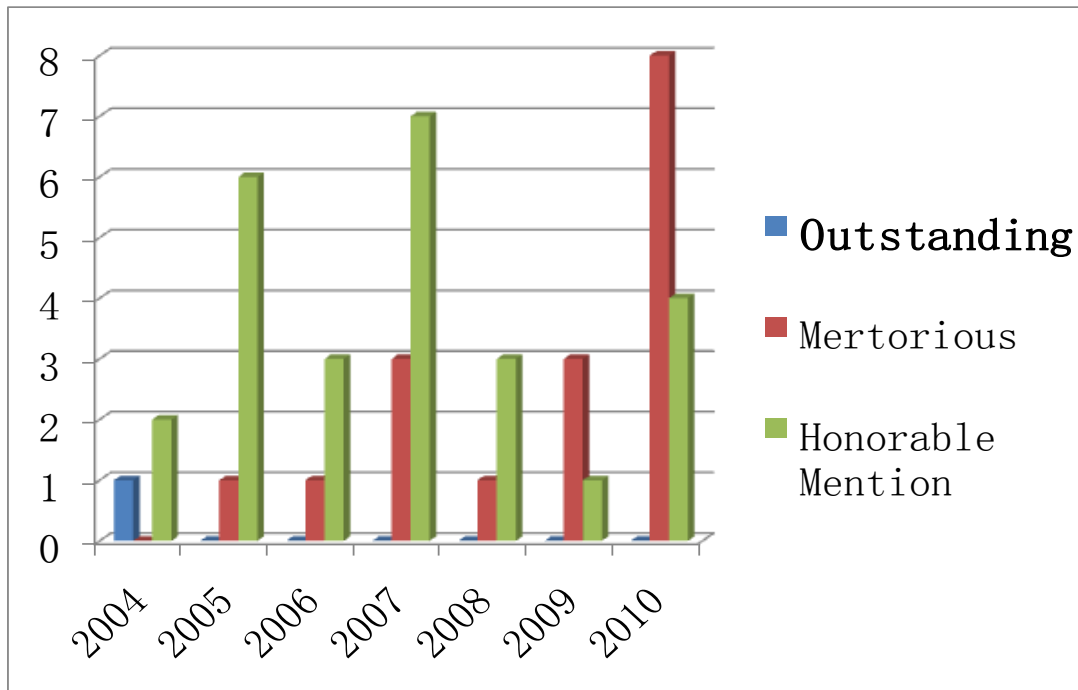


# Undergraduate Sci. & Tech. Activities and Contests

## 1. Mathematical Modeling: Study, Training and Contest



## American: Mathematical Contest in Mathematical Modeling Outstanding Winner



## 2. ACM Program Design Contests

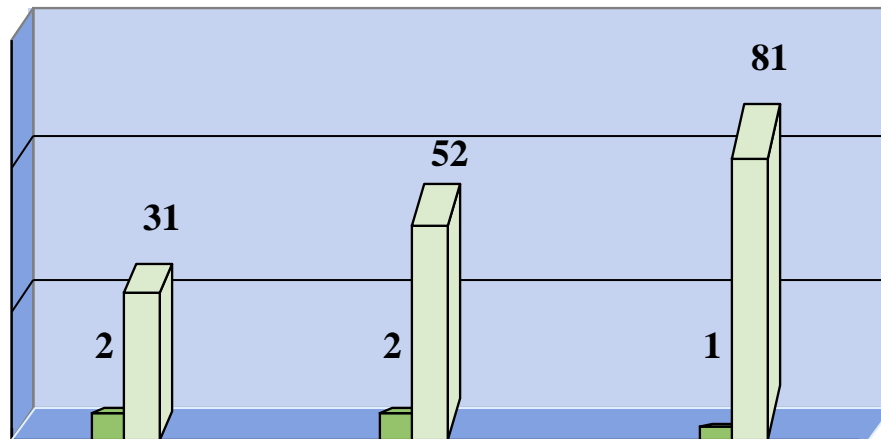
### World Finals

**The 32nd Contest in Canada in 2008: 31st prize**  
**The 34th Contest in Harbin in 2010: 36th prize**

### Qualified Contest (Asian Section)

**Participated 9 times with 33 teams:**  
**1 Champion, 1 Second place**  
**10 Gold Medals, 14 Silver Medals and 17 Bronze Medals**

### 3. 2009 The 1st Chinese Undergraduate Math. Contest



- Number of UESTC
- Total number



**Chinese Mathematical Society**

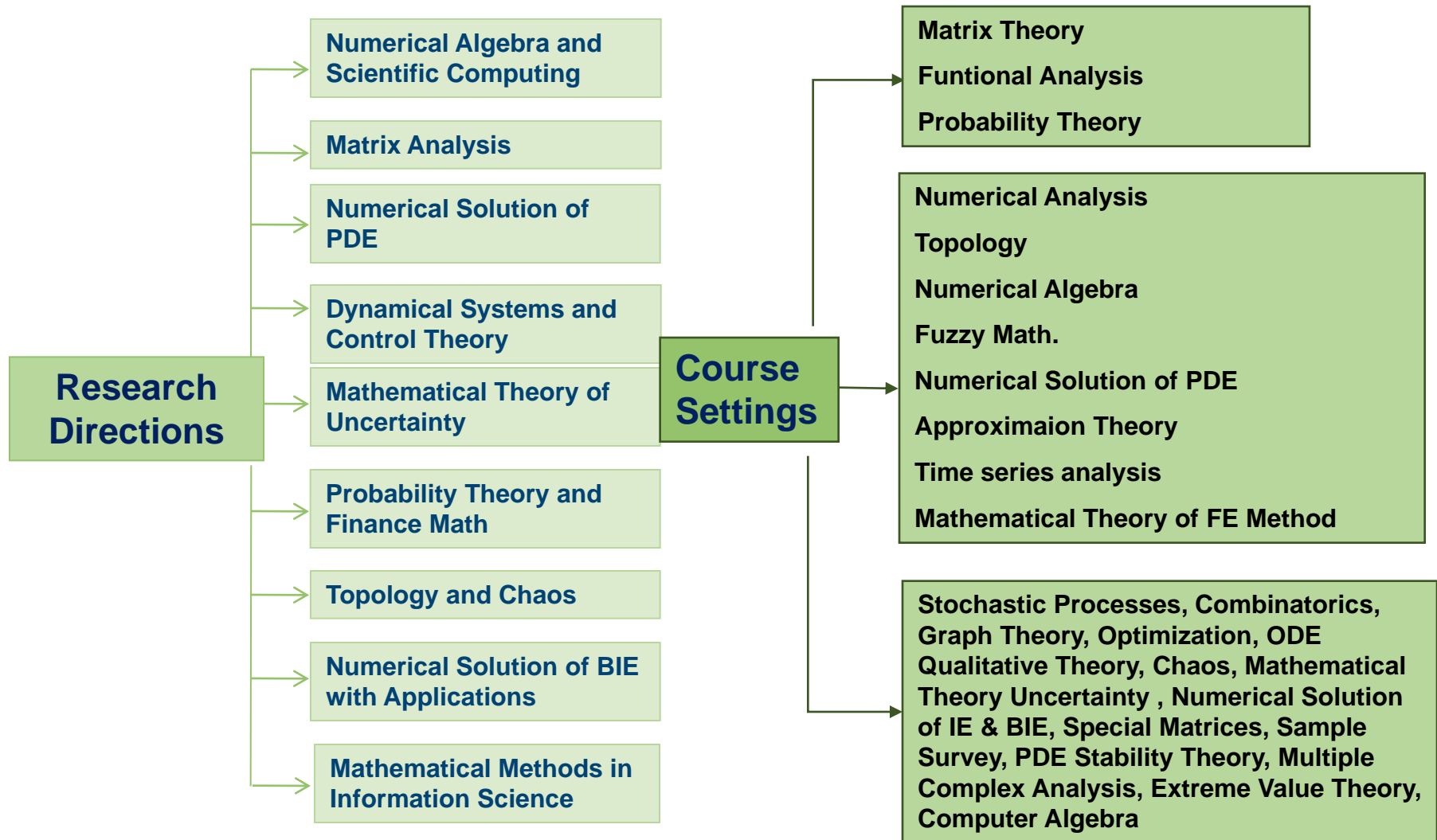


## Typical Awards of Undergraduate Students

Name	Award detail	Time
Zhao, Qian	<b>MCM, Award Outstanding</b>	2004
Wang, Zegao	<b>MCM, Award Meritorious</b>	2004
Ren, Jianzhong and Zhang, Fan	<b>MCM, Award Meritorious</b>	2005
Ni, Wei	<b>MCM, Award Meritorious</b>	2006
Chen, Zhongbiao	<b>MCM, Award Meritorious</b>	2007
Liu, Dehao and Lu, Ying	<b>MCM, Award Meritorious</b>	2009
Shen,Zhirong and Rong Yuanhua	<b>MCM, Award Meritorious</b>	2009
Yang, Guangxu	<b>ACM-ICPC- Acian Section (Harbin subSection) Gold Medal</b>	2009
Luo,Xianghong	<b>ACM-ICPC Final: the 31<sup>st</sup> prize</b>	2008
Wen, Chengming	<b>ACM-ICPC- Acian Section (Beijing subSection) Gold Medal</b>	2006
Cheng, Guofengand Hu, Zhijun	<b>CUMCM: the first prize</b>	2004
Xia, Xiao	<b>CUMCM: the first prize</b>	2006
Liao, Shuohao	<b>CUMCM: the first prize</b>	2009
Wu, Xinxing	<b>1st China Undergraduate Mathematical Contest: the second prize (mathematical section)</b>	2009
Jiang, Wei	<b>1st China Undergraduate Mathematical Contest: the second prize (mathematical section)</b>	2009
Wang, Baojiao	<b>2nd China Undergraduate Art Show: the first prize</b>	2009

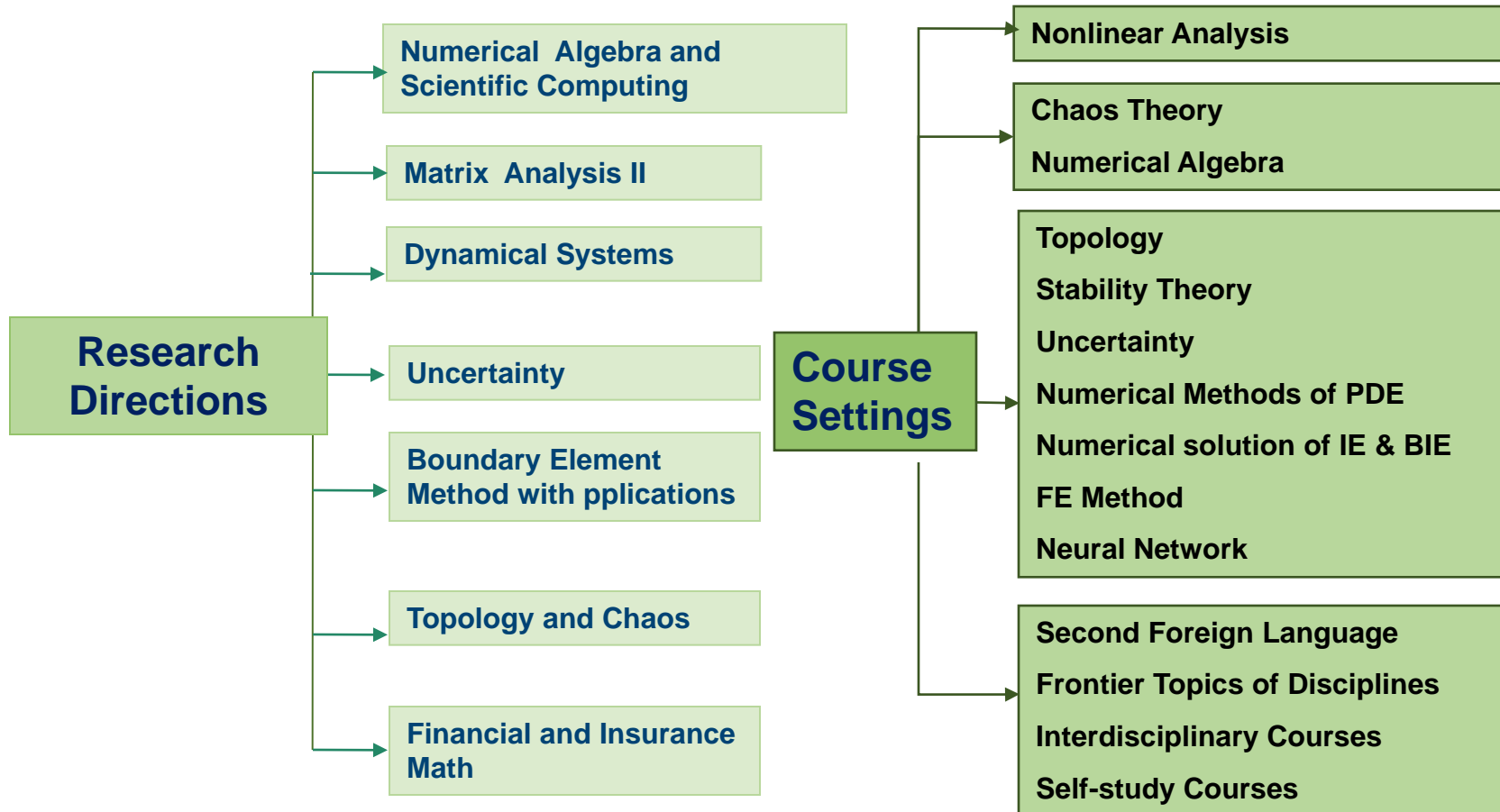


# Education--Master Program



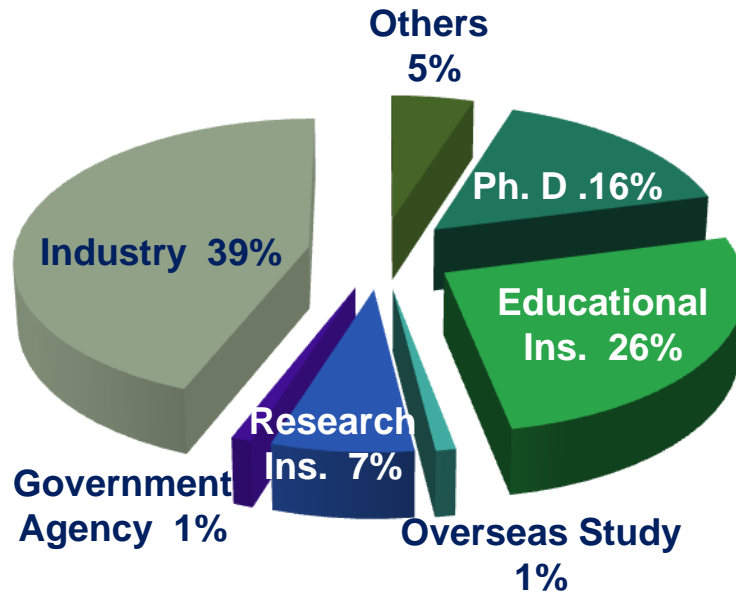


# Education---Ph.D. Program

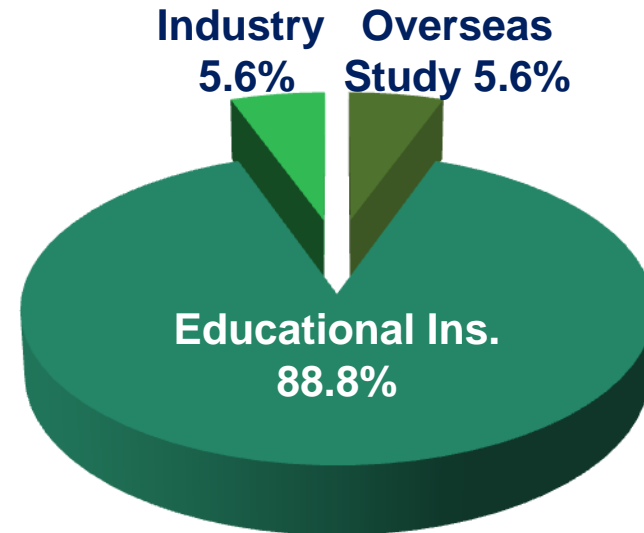




# Posts After Graduation

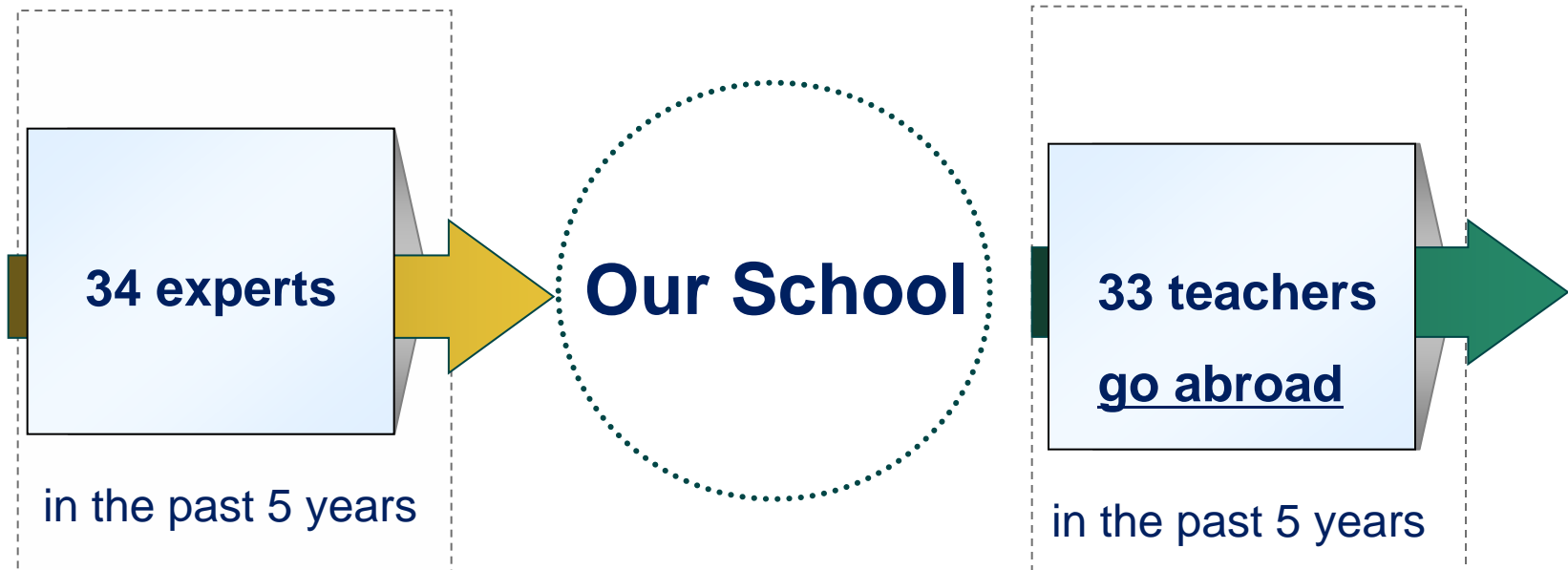


Postgraduates [2009 --- 2010]



Ph.D. Students [2009 --- 2010]

# International Exchange Cooperation



## For example:

Johns Hopkins University, USA  
Iowa State University, USA  
University of Leeds, UK  
University of Waterloo, Canada

.....

University of Minnesota, USA  
Georgia State University, USA  
University of Alberta, Canada  
National University of Singapore

**Thank You !**