



# TSINGHUA UNIVERSITY INTERNATIONAL MASTER'S PROGRAM IN NUCLEAR ENGINEERING AND MANAGEMENT

清华大学核电工程与管理国际人才培养  
专业硕士学位项目





# TUNEM



## 7.7

## OVERVIEW OF TUNEM

### 项目概览

TUNEM is a 2-year professional degree program, which is tremendously supported by the National Energy Administration of China and the Ministry of Education of China with a full scholarship. Meanwhile, the three major nuclear power groups in China, China National Nuclear Corporation (CNNC), State Power Investment Corporation (SPIC), and China General Nuclear Power Corporation (CGN), also provide great support. Every year TUNEM admits 30 applicants with outstanding academics and global vision in the field of nuclear engineering and management, who are willing to further their studies in China and to make contributions to the cooperation between China and their motherlands.

清华大学核电工程与管理国际人才培养专业硕士学位项目由中国国家能源局和中国教育部支持，并提供全额中国政府奖学金，学制一般为2年。同时，中国核工业集团有限公司、国家电力投资集团有限公司、中国广核集团有限公司三大核电集团给予大力支持。该项目每年录取30名在核能与核技术工程领域具有职业素养和国际视野、渴望在华深造并愿为中国与其母国的友好合作与发展做出贡献的高层次专门人才。





## 1.2

## PROFESSIONAL COURSES OFFERED IN ENGLISH

### 专业课程英文授课

Students are required to take Chinese courses, professional courses, internship and academic activities. The program provides a comprehensive professional education and research opportunity in the field of nuclear engineering including thermodynamics, heat transfer, fluid flow, electrical science, chemical engineering, material science, mechanical science, nuclear physics, reactor theory, fuel cycling, radiation protection, and so on.

The courses are scheduled to permit either intensive study in a single field or interdisciplinary study between fields. Comprehensive introductory courses are given to provide a common basis of understanding for those students of dissimilar backgrounds. Professional courses are selected in consultation with the graduate coordinator or a faculty advisor to meet his/her academic and career goals. Some internship is designed for students to gain professional experiences in companies of nuclear industry in China.

学生需完成中国语言课、专业课、实习和各种学术活动。该项目计划在核工程研究领域提供全面的专业教育，包括热力学、传热学、流体力学、电气科学、化学工程、材料科学、机械科学、核物理、反应堆理论、核燃料循环和辐射防护。

课程允许单一学科或跨学科领域之间的交叉选修。综合概论课程适合不同背景的学生对本专业有总体了解。专业课程的选择在教师指导下进行，以适合未来课题的研究和职业发展。为培养专业实践能力，学生将有在中国核电企业内实习的机会。



*The normal period of this program is 2 years.*

该计划学习期限一般为2年。



## 1.3

## INTERNSHIP

### 实习

Based on the plan, the two-year master program requires half-year internship or on-spot survey. During the on-spot survey, student will design and conduct scientific survey on China-specific issues with the help of supervisors. A diverse number of practice opportunities are available in nuclear industry companies of CNNC, SPIC and CGN. During the on-spot survey, students will be exposed to methods and techniques used by natural and social scientists to identify, analyze and interpret nuclear engineering problems. The on-spot survey will be in Beijing or in other parts of China, and usually conduct in the summer after the first academic year.

在两年硕士期间，学生必须完成不少于半年的实习和实地调查等实践环节。学生将在导师的帮助下，设计并完成富有中国特色的项目调查研究。中核集团、国家电投或中广核提供了大量的实践机会。在现场调查过程中，学生有机会接触到科学家用先进的方法和技术来识别、分析和解释核工程问题。实习将安排在北京或其他省市，通常在第一学年后的暑假进行。

## 1.4

## THESIS

### 论文

Students are required to conduct an independent research project which will be supervised by a faculty member of Tsinghua University and a senior researcher of CNNC, SPIC and CGN. The research topic comes from the actual project. A thesis topic selection plan and a topic selection report are required in the second term. Students are required to submit a thesis in English with an executive summary in Chinese or a thesis in Chinese. The final thesis defense is required.

学生由清华大学教师和来自中核集团、国家电投或中广核的专家作为联合导师指导进行独立的项目研究。研究课题来自于实际项目，要求在第二学期完成书面的选题计划和正式的选题报告。学生在毕业前要求提交由英文撰写的论文并附上详细中文摘要，或提交中文论文，并完成最终论文答辩。



# TSINGHUA UNIVERSITY

2.1

## TSINGHUA UNIVERSITY

清华大学



Tsinghua University was founded in 1911 with an international program to help Chinese students to study abroad. Based on the favorable academic atmosphere and leaning environment, it has become one of the world leading universities.

Today, it is one of the most attractive universities in the world, rooted in the rich cultural background. It has become a bridge of international science and technology, education and cultural exchanges, the cradle of training elite leaders, the trustworthy partner of numerous research experts and scholars.

清华大学始建于1911年，自成立以来，有一大批国际项目支持学生去国外学习，得益于其良好的学术氛围和学术环境，已发展成世界著名高等学府之一。

清华大学作为当今世界最具吸引力的大学之一，根植于其丰富的文化底蕴，它已成为国际科技、教育和文化交流的桥梁，是培养精英领袖的摇篮，更是无数科研专家、学者值得信赖的合作伙伴。



The reemergence of China as an economic, scientific and cultural powerhouse has shifted the dynamics of global learning, presenting the world's best and brightest with unprecedented opportunities for advancing human knowledge in partnership with Chinese thinkers and researchers. In this world, institutions of higher education are engines of collaborative teaching and learning. That is why Tsinghua University is evolving, advancing and expanding.

The 21st century requires problem solvers with broad perspectives and international outlook. Success is no longer just about being the smartest, honing your expertise in a single area and looking at problems within your field of vision. Interconnectedness is a new reality.

中国经济、科学、文化的崛起为世界树立典范，也为我国的高端人才提供前所未有的机遇。当今世界，高等学府作为合作办学的载体，也推动了清华大学的演变、发展和进步。

21 世纪迫切需要具备广阔视角和国际视野的人才，以解决人类面对的各种问题。成功不再只是在某个领域成为专家，互通互联是当今的新形势。

“

*The global challenges we face require strategic cooperation, mutual understanding, and leadership built upon hands-on experience.*

全球化挑战下需要我们加强战略合作、共同认知以及实践领导力。

<https://www.tsinghua.edu.cn/en/>



The campus, set in former imperial gardens of the Qing Dynasty, is home to over 40,000 students drawn from 120 countries. Tsinghua offers a friendly and welcoming community where students can get involved in their favorite activities and try new ones. Students can choose from associations of the university and activities, such as sports competition, community service, New Year's party, tourist visits to Chinese cultural and historic sites, concerts etc..

Students are encouraged to participate in various extracurricular activities, so that they can achieve a well-rounded development.

For details about Tsinghua University, please visit <https://www.tsinghua.edu.cn/en/>

清华大学坐落于北京西北郊风景秀丽的清华园—清朝的皇室花园，吸引了来自全世界近 120 个国家超过 4 万名学生学习。清华校园生活丰富多彩，社团蓬勃发展，百花齐放，每年组织各种活动如运动会、社区服务、新年晚会、历史文化遗址参观、音乐会等，学生可以根据自己的喜好参加。

学校鼓励学生参加各种课外活动，促进学生全面发展，详情请参阅链接：<http://www.tsinghua.edu.cn/>





## 2.2

DEPARTMENT OF  
ENGINEERING PHYSICS

## 工程物理系

Department of Engineering Physics (DEP) was founded in 1956 and has been committed to our mission to provide advanced education of science and engineering for talented students in atomic energy science and technology in China.

Whilst undergoing constant reform and innovation, and throughout striving to cultivate high-quality staff and students with world-wide vision and impact. Currently, the number of undergraduates and postgraduates is 600 and 800 respectively. Meanwhile, DEP is home to 107 faculty members, among whom 36 have earned professorship and 63 with associate professorship

DEP consists of six research institutes, which are Institute of Nuclear Technology and Application, Institute of Technical Physics, Institute of Nuclear Energy Science and Engineering Management, Institute of Safety Science and Technology, Institute of Medical Physics and Engineering and the Institute of Modern Physics. DEP covers three first-level disciplines, which are Nuclear Science and Technology, Safety Science and Engineering and Physics. Nuclear Science and Technology is one of the most respected and dominant disciplines in Tsinghua University, which has been ranked No.1 in the national first-level discipline evaluation for four consecutive times.

DEP has undertaken and completed a large number of major and key projects associated with national scientific research programs, including National Key R&D Program, National High-tech R&D Program (863 program), National Basic Research Program (973 program), and programs from the National Natural Science Foundation of China (NSFC).

Since 2004, our annual research funding has exceeded one hundred million RMB. DEP collaborates extensively

工程物理系成立于1956年，是为了培养理工结合的新型人才，开创和发展我国的原子能科学技术而成立的。

工程物理系不断改革创新，以培养输送大批高素质、高质量、具有国际化视野的核领域卓越人才为目标。在校本科生和研究生分别为600人和800人。工程物理系在编教职工107人，其中，具有正高级职称36人，副高级职称63人。

工程物理系设有核技术及应用、技术物理、核能科学与工程、安全管理、安全科学与技术、医学物理与工程、近代物理6个研究所。覆盖核科学与技术、安全科学与工程、物理学3个一级学科。其中，核科学与技术一级学科是清华大学的传统和优势学科，连续四次在全国一级学科评估中排名第一。

工程物理系承担和完成了国家重点研发计划、科技支撑计划、973、863、国家自然科学基金等一大批国家重大、重点科研项目，同时积极联合企事业单位开展合作科学研究。

自2004年以来，年度科研经费均超过亿元。工程物理系积极探索产学研一体的技术创新体制机制，在安全检测技术、公共安全应急技术方面成功实现了成果转化。工程物理系取得了一系列重大科技奖励，近十年荣获科技奖励46项。

工程物理系建设了一系列科研设施与科研平台，包括中国锦屏地下实验室（CJPL），中国暗物质实验合作组（CDEX），中国联合球形托克马克（SUNIST），同位素分离，清华汤姆逊散射X射线源（TTX），微型脉冲强子源（CPHS）等。参与了多项基础研究的国际合作，包括大型强子对撞（LHCb）实验，大亚湾中微子实验，超级神冈级实验和STAR相对论重离子对撞机（RHIC）实验。

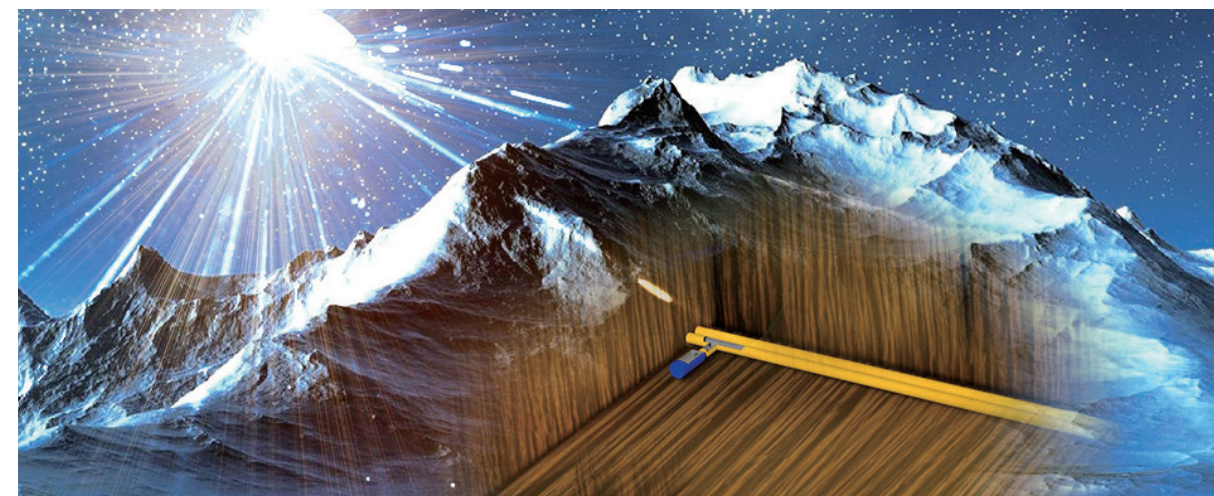
with industry on scientific research, and explores technical innovation systems and the mechanisms of production, as well as teaching and research integration. The capacity of our research has successfully transformed security detection technology as well as public safety emergency response technology. Faculty members have received a series of major science and technology awards.

DEP has established a number of scientific research facilities and platforms, such as China JinPing underground Laboratory (CJPL), China Dark Matter Experiment (CDEX), Sino-UNited Spherical Tokamak (SUNIST), Isotope Separation, Tsinghua Thomson-scattering X-ray source (TTX), Compact Pulsed Hadron Source (CPHS), etc. Our faculty members have participated in international collaborations on fundamental research, including the Large Hadron Collider beauty (LHCb) Experiment, Daya Bay Reactor Neutrino Experiment, Super-Kamiokande Experiment, and STAR Experiment at the Relativistic Heavy Ion Collider (RHIC).



*Nuclear Science and Technology is one of the most respected and dominant disciplines in Tsinghua University, which has been ranked No.1 in the national first-level discipline evaluation for four consecutive times.*

*核科学与技术一级学科是清华大学的传统和优势学科，连续四次在全国一级学科评估中排名第一。*





## 2.3

# INSTITUTE OF NUCLEAR AND NEW ENERGY TECHNOLOGY

## 核能与新能源技术研究院

Established in 1960, the Institute of Nuclear and New Energy Technology (INET) has developed into one of the largest research and design institutions in the world.

In 1986, the research done by INET on High Temperature Gas-cooled Reactor (HTGR) was included in the National High Technology Research and Development Program ("863" Program) of China. In March 1992, the State Council of China approved the construction of the first 10MW High Temperature Gas-cooled Reactor (HTR10). In June 1995, the construction of HTR-10 was commenced and in December 2000 the criticality was reached. In January 2003, HTR-10 reached its full power operation and began to supply power to the grid.

In addition to the achievements in scientific and technology development, INET has made great accomplishments in post-graduate education, continuing education, international cooperation and exchange, etc..

INET has three test reactors in the nuclear field. It originally focused only on nuclear science and engineering. INET believes nuclear energy and nuclear technology application will continue to play an important role in the world. In addition, INET will also improve its

核能与新能源技术研究院始建于1960年，是中国高等教育系统规模最大的科研与设计单位。

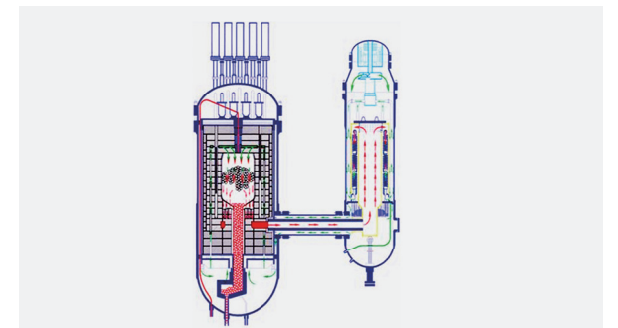
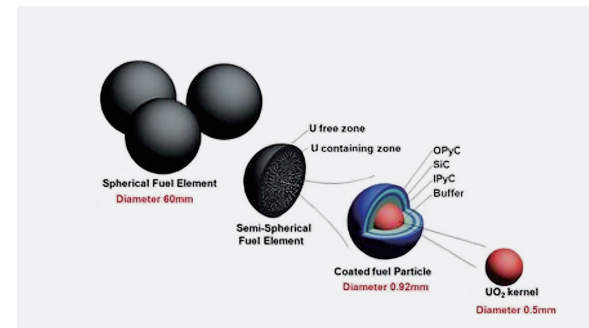
1986年，由核研院建设的高温气冷堆研究被列入国家高技术发展计划项目(863计划)。1992年3月，国务院批准立项，在核研院建成一座热功率为1万千瓦(10兆瓦)的高温气冷堆。1995年6月开始动工兴建，2000年12月建成达到临界，2003年1月实现满功率并网发电。

核研院不仅是科研基地，也是人才培养基地，在研究生培养、继续教育、国际交流与合作等方面都取得了骄人的成绩。



*Nowadays, INET has been making efforts to meet the needs of national economy to develop itself into a world-class R&D base.*

*当前，核研院致力于满足国家经济发展的需要，争取成为世界级研发机构。*



capability in the fields of energy policy and technology evaluation, and new energy technology like hydrogen, fresh water supply, environment technology, and advanced materials.

Through its continual progress, INET intends to become an internationally recognized R&D center based on its contribution and impact. INET has established partnerships with many international institutions and has relationships with colleagues worldwide.



核研院在核能领域拥有三座试验用核反应堆，主要研究核科学与工程，核研院认为核能与核技术应用将在众多方面发挥不可替代的作用。此外，核研院也将在能源政策、技术评估、新能源技术领域比如氢、淡水供给、环境技术、高等材料等方面提升整体实力。

经过多年努力，核研院已发展成具有国际影响力的研发基地，与很多科研机构、一流大学建立了合作关系。



# SUPPORTERS

## 3.1

## SCHOLARSHIP

### 奖学金

#### The CHINESE GOVERNMENT SCHOLARSHIP 中国政府奖学金

The Chinese Government Scholarship (CGS) is set up by the Chinese government to sponsor international students, teachers and scholars to study and conduct research in Chinese universities, which aims to promote the mutual understanding, cooperation and exchange in various fields between China and other countries. CGS-TUNEM Program is co-established by the Ministry of Education of P.R. China and the National Energy Administration to fund students enrolled by TUNEM. All the students enrolled by TUNEM will be funded by full Chinese Government Scholarship.

中国政府奖学金由中国政府设立，用于资助世界各国优秀学生、教师、学者到中国的大学学习或开展研究，旨在增进中国人民与世界各国人民的了解和友谊，发展中国与世界各国在各领域的交流与合作。中国政府核电奖学金项目由中国教育部和国家能源局联合设立，旨在资助清华大学核电工程与管理国际人才培养专业硕士学位项目学生。该项目录取的所有学生都将享有中国政府全额奖学金。

#### CGS COVERAGE

##### 资助内容

Total for two years	¥248,400
The Full CGS includes:	
Tuition fees	¥78,000
On-campus accommodation	¥58,400
Living allowance	¥108,000
Comprehensive medical insurance	¥4,000

\*¥100 equals to \$15.2 with current exchange rate.

两年总计	¥248,400
全额奖学金包含	
学费	¥78,000
住宿费	¥58,400
生活费	¥108,000
综合医疗保险费	¥4,000

#### DURATION OF CGS

##### 资助时长

2 Years / 2 年

#### NUMBER OF WINNERS

##### 资助人数

30 Winners / 30 人





### CGS APPLICATION PROCEDURE 申请流程

1. Applicants should complete the Online Application on the website of the THU Graduate Programs Application System for International Students and be pre-admitted by the Program. Website: <http://gradadmission.tsinghua.edu.cn>
  2. Applicants should complete the CGS scholarship Application on the website of the China Scholarship Council (CSC). Website: <http://www.campuschina.org>
  3. Tsinghua University examines the scholarship application and nominates to CSC.
  4. CSC examines and approves the scholarship application.
1. 报考核电工程与管理国际人才培养专业硕士学位项目，并被院系拟录取。报考网址：<http://gradadmission.tsinghua.edu.cn>;
  2. 申请人登录国家留学基金委，按要求完成奖学金在线申请，网址：<http://www.campuschina.org>;
  3. 清华大学审核奖学金申请，并上报国家留学基金委；
  4. 国家留学基金委审批。

## 3.2

# CHINA NATIONAL NUCLEAR CORPORATION

## 中国核工业集团公司

China National Nuclear Corporation (CNNC) is a state-owned key enterprise, with an asset of about CNY 700 billion, and a staff of about 150 thousand employees. CNNC owns 12 holding Public Companies, about 800 member units including enterprises and institutions of all kinds at all levels. Among them, there are 53,300 professional technical experts and 17 academicians from Chinese Academy of Sciences and Chinese Academy of Engineering.

As the main body for China's national nuclear industry, CNNC has established a complete industrial system of nuclear science and technology, serving as the major driving force of nuclear power and construction in China.

CNNC is mainly engaged in the scientific R&D, design, construction, production and operation in the fields of nuclear power, nuclear fuel cycle, nuclear technology application, nuclear environmental protection project, as well as foreign economic cooperation, and import and export business. It is currently the major investor for most nuclear power plants in operation and under construction in China, the mainstay for the development of nuclear power technologies, the most important nuclear power design and EPC contractor, nuclear power operation and technical service provider, and nuclear power plant exporter. It is the exclusive supplier of nuclear fuel cycle in China, the professional force of nuclear environmental protection project, and the backbone of nuclear technology application. Its business scope covers the whole industrial chain ranging from uranium exploration, mining, fuel production through reprocessing, as well as renewable energies. It is the only company in China with a complete industrial system of nuclear industry.

<http://en.cnncc.com.cn/>

中国核工业集团有限公司（简称中核集团）是国有重要骨干企业，资产规模约 7000 亿元，员工约 15 万人，其中专业技术人才达 5.33 万人，中国科学院、工程院院士 17 人，下属 12 家上市公司，各级各类企事业单位约 800 家。

中核集团作为国家核科技工业的主体，拥有完整的核科技工业体系，是国家核能发展与核电建设的主力军。

中核集团主要从事核电、核燃料循环、核技术应用、核环保工程等领域的科研开发、设计、建造和生产经营，以及对外经济合作和进出口业务，是目前国内投运和在建核电的主要投资方、核电技术开发主体、最重要的核电设计及工程总承包商、核电运行技术服务商和核电站出口商，是国内核燃料循环专营供应商、核环保工程专业力量和核技术应用骨干，业务覆盖从铀矿勘探、开采、燃料制造、到后处理、可再生能源等全产业链，是中国唯一拥有完整核工业产业体系的集团公司。



*The China National Nuclear Corporation (CNNC) is a large State-owned enterprise under direct management by the central government. It successfully built the first nuclear power plant in the Chinese mainland.*

中国核工业集团公司是经国务院批准组建的特大型国有独资企业，成功建成我国大陆第一座核电站。



CNNC has 6 national key laboratories, 23 research institutes, 1 national engineering technology center, 21 key laboratories, 12 national and ministerial R&D platforms, 14 engineering technology centers, 3 ministry level R&D platforms.

As China's only enterprise which has achieved bulk exports of nuclear power plants, CNNC has already exported 7 nuclear power units and 8 reactors to 7 countries. CNNC is one of the stake holders of Rossing uranium mine (Namibia), the world's fourth biggest uranium producer. CNNC has established trade relations with more than 50 countries, negotiating for cooperation in nuclear power, uranium resources, nuclear fuel, application of nuclear technology, etc.

CNNC has signed the commercial contract with Pakistan for C-5 project, framework agreement on pressurized water reactor NPP with Argentina, contract of comprehensive cooperation on nuclear energy with France, contract on cooperation for construction of nuclear energy research and innovation center with Britain, as well as framework agreement with Sudan. Besides, CNNC has been deepening nuclear cooperation with Saudi Arabia, Bulgaria, Jordan and Algeria among others.

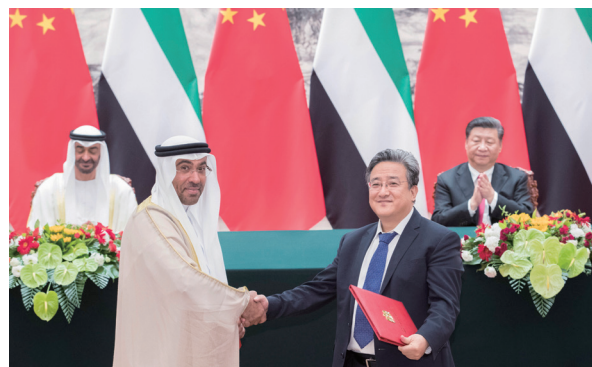
CNNC's nuclear technology application extends to isotopes and related products, nuclear medicine, nuclear instruments and apparatus, radioactive sources and industrial applications, as well as irradiation processing. CNNC accounts for a market share of 70% in the area of radioactive medicine in China. CNNC is the only Chinese company that produces radioactive sources for medical purposes.

中核集团围绕产业链布局创新链，每个重要生产环节均有科技平台支撑，具备体系完整的核科技研发平台，其中包括 6 个国家重点实验室，23 家集团公司内部科研院所，1 个国家级工程技术中心，21 个集团公司重点实验室，12 个国家级研发平台，14 个集团级工程技术研究中心，3 个部委级科研平台。

中核集团是中国唯一出口过核电站并实现批量出口的企业，已成功向 7 个国家出口过 7 台核电机组、8 台反应堆或核动力装置，正式控股世界第四大产能铀矿——纳米比亚罗辛铀矿山，并与全球 50 多个国家和地区建立了科技经贸关系，正在商谈核电及铀资源、核燃料、核技术应用等核工业全产业链合作。

中核集团已与巴基斯坦签署 C-5 项目商务合同，与阿根廷核电公司签署阿根廷压水堆核电站框架合同，与法国签署核能全面合作合同，与英国签署核能研究及创新中心建设的合作合同，与苏丹签署合作框架协议，并与沙特阿拉伯、保加利亚、约旦及阿尔及利亚等国家开展了核能领域的深度合作。

中核集团拥有中国最大的集研发、生产、销售、服务于一体的核技术企业，在放射性药物领域中核集团的国内市场占有率超过 70%，在放射源领域中核集团是国内唯一可生产供应医用放射源的机构。



## 3.3

## STATE POWER INVESTMENT CORPORATION LIMITED

## 国家电力投资集团

State Power Investment Corporation Limited (SPIC) was established in June 2015 through the merger of China Power Investment Corporation and State Nuclear Power Technology Corporation. SPIC takes charge of two major national science & technology projects of large-scale advanced pressurized water reactor power plants and heavy-duty gas turbines. Its business covers electric power, heat, coal, aluminum, logistics, finance, environmental protection, photovoltaics, power station services and other fields.

SPIC is one of China's top five power generators and an integrated energy group with power as its core. It has a total installed capacity of 131 GW, including 75.05 GW of thermal power, 22.98GW of hydropower, 4.48 GW of nuclear power, 13.86 GW of PV power and 14.78 GW of wind power, with clean energy accounting for 47.57% of the total, demonstrating a distinctive clean development feature. It supplies 422.6 TWh of power and 155 million GJ of heat per annum. It also owns a coal production capacity of 80.40 million tons per year (t/y), aluminum smelting capacity of 2.5 million t/y and railway transportation line of 623 km.

Being one of China's three nuclear power developers and operators, SPIC owns a number of nuclear power plants (NPPs) under construction or in operation, such as Hongyanhe NPP in Liaoning Province, and Haiyang NPP in Shandong Province. It has also reserved several project sites in both inland and coastal areas of China. SPIC is the main entity, carrier and platform for the self-reliant innovation of the Gen III nuclear power technology, and the leading entity for the major national science & technology project of large-scale advanced pressurized water reactor (PWR). Enjoying full industry chain and strong technological capabilities in the R&D, design,

国家电力投资集团有限公司（简称“国家电投”）成立于 2015 年 6 月，由原中国电力投资集团公司与国家核电技术公司重组组建，担纲大型先进压水堆核电站和重型燃气轮机两项国家科技重大专项，业务涵盖电力、热力、煤炭、铝业、物流、金融、环保、光伏、电站服务业等领域。

国家电投是中国五大发电集团之一。是一家以电为核心、一体化发展的综合性能源集团公司。电力总装机容量 1.31 亿千瓦，其中：火电 7505 万千瓦，水电 2298 万千瓦，核电 448 万千瓦，光伏发电 1386 万千瓦，风电 1478 万千瓦，在全部电力装机容量中清洁能源比重占 47.57%，具有鲜明的清洁发展特色。年发电量 4226 亿千瓦时，年供热量 1.55 亿吉焦。拥有煤炭产能 8040 万吨，电解铝产能 253.5 万吨，铁路运营里程 623 公里。

国家电投是中国三大核电开发建设运营商之一。拥有辽宁红沿河、山东海阳等多座在运或在建核电站，以及一批沿海和内陆厂址资源，是实施三代核电自主化的主体、载体和平台，以及大型先进压水堆国家科技重大专项的牵头实施单位，肩负着国家三代核电自主化、产业化、国际化的





construction, operation and management of NPPs as well as manufacturing of nuclear power equipment and materials, it pursues the aim of self-reliant innovation, industrialization and internationalization of China's Gen III nuclear power.

SPIC has been a Fortune Global 500 company for nine consecutive years, ranking the 316th in 2020. It has a registered capital of RMB 35 billion, total assets of RMB 1,050.5 billion, and employees of 130,000. It holds nine listed and public quoted companies, two of which are red chip companies traded in Hong Kong while five offer A-shares in China's mainland. SPIC ranks forefront among China's top five power generators in terms of 2017 annual revenue and net profit.

SPIC is committed to global businesses. It has presence in 43 countries such as Japan, Australia, Malta, India, Turkey, South Africa, Pakistan, Brazil and Myanmar, with businesses covering power project investment, technical cooperation, EPC, etc. Its overseas assets amount to RMB 78 billion, overseas ongoing installed capacity reaches 10.5 GW and EPC projects for overseas power plants have a total installed capacity of 16.65 GW. In 2016, SPIC successfully obtained A2, A and A- international credit ratings from Moody's, Fitch Ratings and Standard & Poor's respectively and issued USD 1.2 billion overseas bonds for the first time.

In the new era, SPIC will comprehensively implement the philosophy of "innovative, coordinated, green, open and sharing" development initiated by the central government, and build a world-class clean energy enterprise based on the strategic positioning of an advanced energy technology developer, a clean low-carbon energy supplier, and an energy ecosystem integrator.

光荣使命，具备核电研发设计、工程建设、相关设备材料制造和运营管理的完整产业链和强大技术实力。

国家电投是世界五百强企业。国家电投是世界五百强企业。连续九年进入榜单，2020年居第316位。公司注册资本金350亿元，资产总额10505亿元，员工总数13万人。拥有9家上市公司、公众挂牌公司，包括2家香港红筹股公司和5家国内A股公司。2017年利润和净利润均位居五大发电集团前列。

国家电投是一家致力于全球业务的国际化公司。境外业务分布在日本、澳大利亚、马耳他、印度、土耳其、南非、巴基斯坦、巴西、缅甸等43个国家，涉及电力项目投资、技术合作、工程承包建设等。境外资产780亿元。境外在建电力装机1150万千瓦，境外电站EPC项目装机1665万千瓦。2016年，国家电投成功获得穆迪A2、惠誉A、标普A-国际信用评级，并首次在境外发行12亿美元债券。

新时代，国家电投将全面贯彻落实中央提出的“创新、协调、绿色、开放、共享”发展理念，立足先进能源技术开发商、清洁低碳能源供应商、能源生态系统集成商战略定位，建设世界一流的清洁能源企业。

“

*The site construction conditions of CAP1400 project which located in Rongcheng, Shandong province, are ready.*

*在山东荣成石岛湾的先进压水堆核电站重大专项CAP1400示范工程，现场开工条件已经具备。*

<http://www.spic.com.cn/>



## 3.4

# CHINA GENERAL NUCLEAR POWER CORPORATION

## 中国广核集团简介



Established in September 1994, China General Nuclear Power Corporation (CGN, formerly known as China Guangdong Nuclear Power Group) is a state-owned large clean energy group with over 40 subsidiaries.

中国广核集团（简称中广核），原中国广东核电集团，成立于1994年9月，是伴随我国改革开放和核电事业发展逐步成长壮大起来的中央企业，由核心企业中国广核集团有限公司及40多家主要成员公司组成的国家特大型清洁能源企业集团。



Since its inception, CGN has been making unrelenting efforts to fulfill its mission of “developing clean energy to benefit mankind”, and to realize its vision of “building one of the world’s top clean energy enterprises”. By the end of October 2018, CGN has 28 nuclear power units in operation or under construction, with a total installed capacity of 31,740 MWe, which makes CGN the third largest nuclear power company of the world. In addition, CGN owns an installed capacity of 24,000 MWe for wind power and solar photovoltaic power generators in operation. Furthermore, CGN has made great strides in distributed energy, nuclear technology application and energy conservation technical services.

Moreover, CGN has set up 8 state-level nuclear power R&D centers and a national key laboratory to further add to its capabilities to simultaneously build, operate and manage multiple nuclear and other clean energy projects scattered across different regions.

中国广核集团以“发展清洁能源，造福人类社会”为使命，以“成为国际一流的清洁能源企业”为愿景。截至2018年10月底，中广核国内在运、在建核电机组共28台，装机3174万千瓦，是世界第三大核电企业；拥有风电、太阳能光伏发电等可再生能源在运装机容量超过2400万千瓦。另外，在分布式能源、核技术应用、节能技术服务等领域也取得了良好发展。

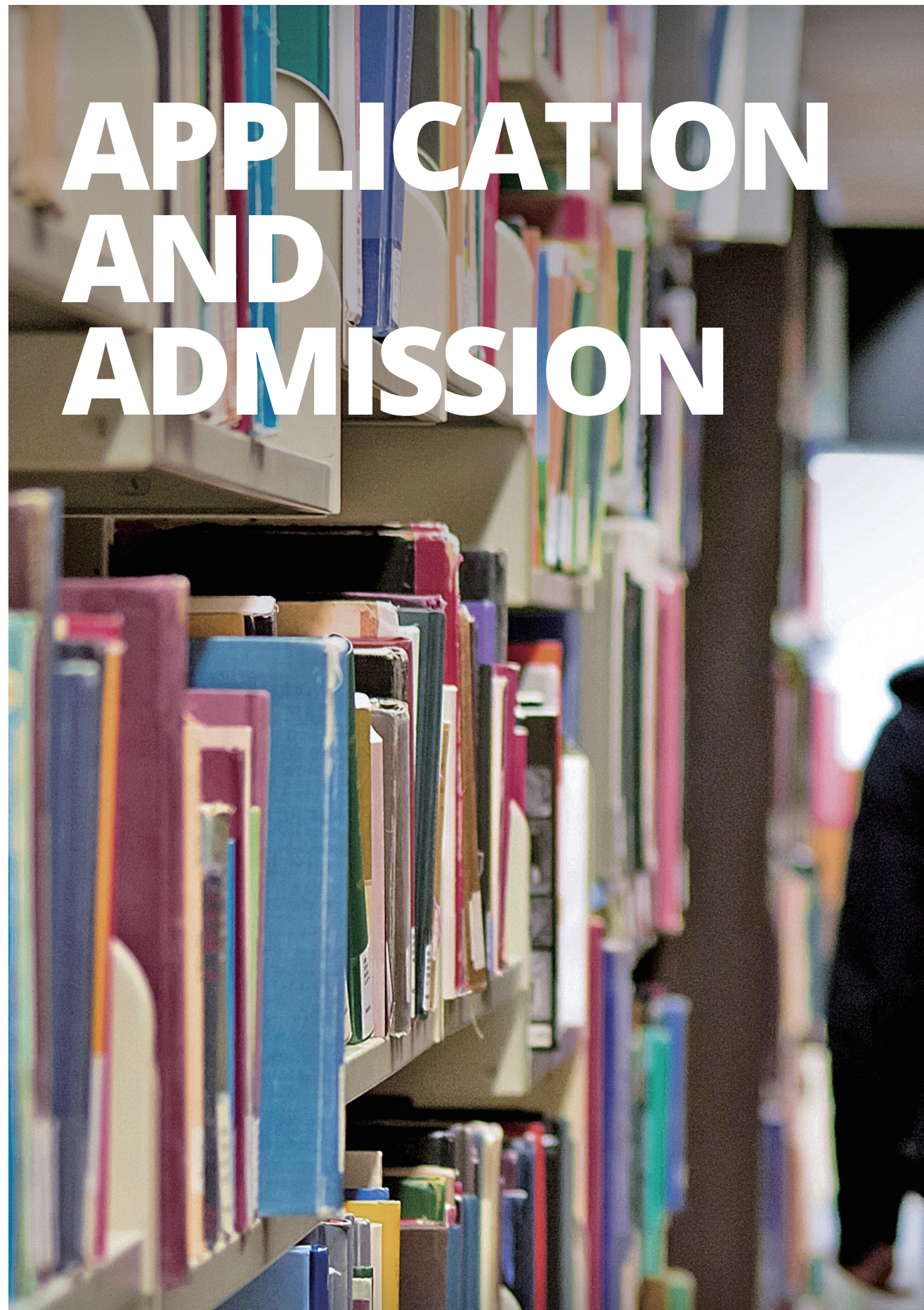
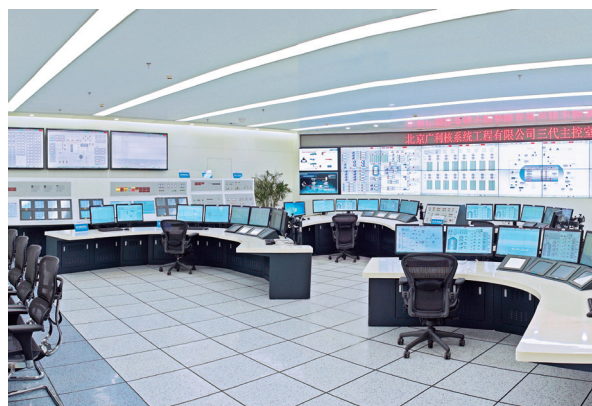
此外，中广核还拥有八个国家级研发中心和一个国家重点实验室，具备了在确保安全的基础上面向全国、跨地区、多基地同时建设和运营管理多个核电、风电、水电、太阳能及其他清洁能源项目的能力。



*The mission of CGN is “developing clean energy to benefit mankind”, and the vision is “building one of the world’s top clean energy enterprises”.*

中国广核集团的使命是“发展清洁能源，造福人类社会”为，愿景是“成为国际一流的清洁能源企业”。

<http://en.cgnpc.com.cn/>



# APPLICATION AND ADMISSION



## 4.1

APPLICATION  
SCHEDULE

## 申请时间

Application	8:00 AM Oct. 15, 2020 - 17:00 Mar. 1, 2021 (Beijing Time)
Comprehensive Assessment	Before Mid-April
Pre-admission	May

\*Please see Admission to TUNEM for the specific application schedule.

You are required to complete application for both TUNEM and CGS.

The final admission result can be found in the application system in early July.

A Certificate of Admission will be issued by THU Graduate Admissions Office after the final admission result is released.

申请	2020年10月15日8:00-2021年3月 1日17:00 (北京时间)
综合考核	4月15日前
预录取	5月

\*具体申请时间请参考当年的招生简章

申请者必须同时完成 TUNEM 和中国政府奖学金的申请。

7月初开始可在申请系统中查询最终录取结果。

被录取者，由清华大学研究生招生办公室发放录取通知书。

## 4.2

ONLINE  
APPLICATION

## 在线申请

## Step 1 Application online

Web. <http://gradadmission.tsinghua.edu.cn/f/login>

- Steps
- Fill in the application information online
  - Upload the application documents
  - Pay the application fee online

Tips Application fee is 800 RMB

## Step 2 China Government Scholarship Application

Web. <http://www.campuschina.org>

## 第一步 在线申请

网址 <http://gradadmission.tsinghua.edu.cn/f/login>

- 步骤
- 在线填写申请信息
  - 上传申请材料
  - 完成申请费付款

备注 申请费用为 800 元人民币

## 第二步 中国政府奖学金申请

网址 <http://www.campuschina.org>





## 4.3

APPLICATION  
DOCUMENTS

## 申请材料

**Please upload all the listed documents to the application system**

**请在申请系统中上传以下申请材料**

- |  |  |
|--|--|
| 1. Personal statement  | 1. 个人陈述                                    |
| 2. Degree certificate or pre-graduation certificate  | 2. 学位证明                                    |
| 3. Academic transcript, for non-English native speaker, TOEFL or IELTS Certificate is advised to upload.   | 3. 硕士及本科期间完整的成绩单，母语为非英语国家的申请者，建议提供托福或雅思成绩单 |
| 4. Two Recommendation letters<br>a. One from scholars who have the title of associate professor or higher in related areas.<br>b. Letter from CNNC/ SPIC/ CGN preferred. | 4. 两封推荐信<br>推荐信之一来自中核集团、国电投集团、中广核集团者优先     |
| 5. Passport personal information page  | 5. 申请者个人普通护照（个人信息页）                        |
| 6. Identification Photo  | 6. 申请者个人近照                                 |
| 7. Other supporting documents required   | 7. 其他申请材料                                  |

\*Please see the Admission to TUNEM for Specific Requirements of Application Documents.

\* 其他申请材料请参见 TUNEM 招生简章

## 4.4

EVALUATION AND  
ADMISSION

## 考查与录取

THU admits students based on evaluation of their application documents together with a comprehensive assessment. The admission committee of TUNEM will review the application documents and select candidates for the comprehensive assessment based on the review results. The comprehensive assessment is generally based on interviews. The specific content, format, requirements and time arrangements are determined by the admission committee of TUNEM and will be notified to applicants who enter the comprehensive assessment.

Tsinghua University comprehensively considers the results of material review, comprehensive assessment and other factors, selects the best candidates and determines the admission list. A Certificate of Admission will be issued by THU Graduate Admissions Office after the final admission result is released. Prior to this, applicants may check their admission status via this Application System.

清华大学采用“申请 - 审核”制，即申请材料审核加综合考核的方式选拔录取国际研究生。申请材料经核电项目专家组审查，根据综合审查结果择优确定参加综合考核人选。综合考核一般以面试为主，具体内容、形式、要求及时间安排等另行通知。

清华大学根据申请材料、综合考核等结果，择优选拔，确定录取名单。录取结果可通过清华大学研究生申请系统查询。被录取者，由清华大学研究生招生办公室发放录取通知书。



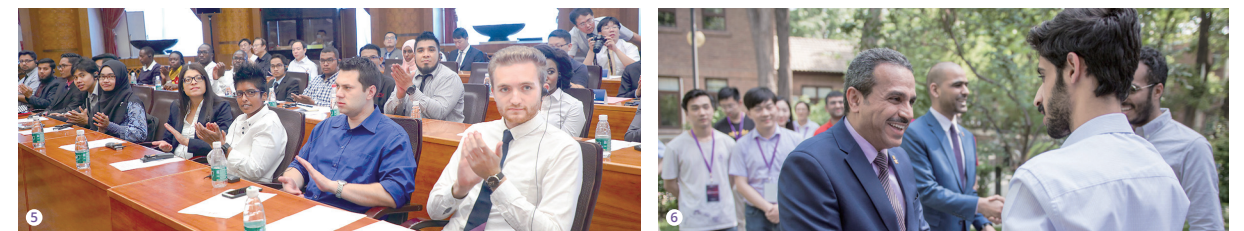


# TUNEMERS



## 5.1 CAMPUS LIFE

### 校园生活



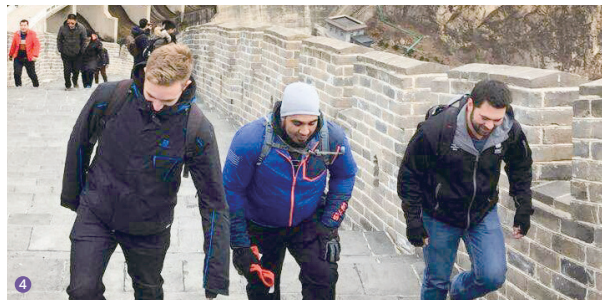
- 1 Enjoy Autumn in Tsinghua University
- 2 Celebrate Christmas with Professor Liu
- 3 Boating
- 4 Class
- 5 Welcome Ceremony for TUNEM 2017
- 6 Symposium of the 'Belt and Road' Nuclear Power Development–Saudi Arabia



5.2

# CULTURE

## 文化浸润



- 1 Practice Kendo and Study East Asia Culture
- 2 Visit a Classical Chinese Garden
- 3 Experience Chinese Traditional Costume
- 4 On the Great Wall
- 5 Explore Historic Buildings

5.3

# INTERNSHIP AND ACTIVITIES

## 专业实践与企业活动



- 1 Attend International Conference on Nuclear Safety Nuclear Emergency and Nuclear Security
- 2 Visit 2020 China International Nuclear Power Industry and Equipment Exhibition
- 3 Visit Nuctech Company Limited
- 4 TUNEM 2017 Visited Nuclear Power Company and Communicated with Industry Supervisors
- 5 Visit Plant During the Internship
- 6 Visit State Nuclear Security Technology Center



5.4

# ANNUAL NEW YEAR'S GALA

## 年终交流暨新年联欢



- 1 Group Photo
- 2 A General Report from TUNEM 2017 by Andi, Wahyuni, SyaheerSabri from TUNEM 2017
- 3 Shosholoza
- 4 Martial Art Show Silat
- 5 Game
- 6 Gifts for TUNEMers



- 7 Crazy Indonesian
- 8 Pakistani Urdu songs
- 9 Chinese Martial Arts
- 10 A Report on Professional Internship from TUNEM 2017
- 11 Turkish Fireflies



5.5

# GRADUATION CEREMONY

## 毕业典礼



- 1 Ceremony Venue
- 2 Remarks by YANG Bin, Vice President, Tsinghua University
- 3 remarks by WANG Xuewu, Dean of Department of Engineering Physics
- 4 Presentation by Student representative
- 5 Ceremony Venue

- 6 Distinguished Guests
- 7 Embassy Officials
- 8 Gift Exchange
- 9 Gift Exchange
- 10 Gift Exchange
- 11 Buffet
- 12 Buffet



5.6

## WORDS FROM TUNEMers

### 学生感言



**Vincent Ben from  
TUNEM 2017**

With the course being a joint venture between the top university in China and the three largest nuclear power companies, the opportunities which the course can offer are countless. I would thoroughly recommend this to anybody considering it. The choice to study in China, obtain a masters and gain industry experience in a two year course was a great decision and thanks to the generous scholarship, the course is available to all.



**Sundstorm Nils  
Francis from  
TUNEM 2017**

TUNEM is a fantastic opportunity to study abroad at one of the top universities in the world in a degree program that is both academic and applied. Nuclear engineering is a highly sought out profession in the UK and a degree with industrial experience highly enhances employability for graduates.

In my time here in China I have gained lots of cultural experience in a vibrant and exciting new city, Beijing has so much to offer and there is something for everyone. The TUNEM program offers the opportunity to travel around China and experience different aspects of the industry with trips to: Hong Kong, Shanghai, Shenzhen, Guangzhou and Hunan.



**Nur Setyo Wahyuni  
from TUNEM 2017**

Studying in one of the best universities in the world is not the only reason I feel so lucky and proud to become a student in the TUNEM program. The program itself is unique and beyond. It gives me not only experiences to learn in the class, but also makes me meet a lot of great people from various countries, visit many Chinese cultural heritage sites and key companies in the nuclear industry, furthermore taking me to feel the real atmosphere of China Nuclear Research activities during the internship period. This program is a complete series to see a clear picture of the China Nuclear Industry.



**Jakoet Abu-bakr  
from TUNEM 2017**

Being a TUNEMer of 2017 has provided me with rich life lessons and experiences, which I can definitely utilize in my professional and personal life and has given me great insight and respect for the Chinese Nuclear Industry. It has developed tremendously over the last 30 to 40 years. The Chinese nuclear industry is highly skilled and developed. The environment is conducive for learning and development and provides an excellent platform to broaden your understanding and knowledge of the nuclear power industry. It has given me the opportunity to establish valuable professional networks in this field that I could use in the near future to provide specialized nuclear engineering services to my country.



**Syaheer Bin Sabri  
from TUNEM 2017**

Being part of Tsinghua University Nuclear Engineering & Management (TUNEM) family is one of the precious gifts I've ever experienced in my life. For TUNEM 2017 intake, we came from various countries with our own beautiful and unique cultures. By mingling around and having fun together with our classmates during class and other activities to explore the beauty of China, we got to know more about each other and also about the country's background. The differences in cultures and languages make each one of us learn something really new where we can't get it at somewhere else. That makes us more united as classmates and friends.



**Ruaa Elbadry from  
TUNEM 2017**

Before I applied to the TUNEM program I was a little bit anxious since my undergraduate major was electrical engineering, but as I came through I found that doesn't really matter because the teaching strategy was to start with the basics to bring all of the students to the same level of understanding and knowledge. The teaching style was very much impressive in nuclear energy engineering and nuclear science for sure. The professors have taken us through numerous research papers to give us an insight into nanotechnology.



**Elyes Ghanouchi  
from TUNEM 2018**

Everything here is so different from what we heard in the media. People here are so nice, helpful and welcoming, the country is so developed. Also I'm in love with the Chinese food and you can eat every type of food that you want, you can find everything here.

The campus is huge and so beautiful, I understand why people said it's one of the most beautiful campuses in the world.

TUNEM is like our family we study together, we travel together, play sport, we help each other, I'm the only Tunisian here and I never feel myself alone here.



**Rosilatul Zailani  
from TUNEM 2018**

I am the 2nd batch of TUNEM student. Our curriculum starts in early September 2018. Based on my experience, even approximately a week before the lecture, we have been given the honor of being a representative of Tsinghua University to attend the International Exhibition on China Nuclear Power Industry and Equipment. The program also facilitates students to directly see how nuclear technology happens in China by doing an internship program at the nuclear power company with whom they are collaborating.





**Lee Jun Keat**  
from TUNEM  
2018

I would say that It is an honor being here, studying in Tsinghua University on of the most popular university in the world. While having the prestige of being one of the top universities, Tsinghua university do not only focus on study. Contradictory aside from the normal classes, we, TUNEMers were given plenty of time to explore both the culture and beautiful places in China. We also wouldn't need to worry about these expenses be it. Hence, we would gain the chance to travel around China, knowing experts from different sectors and getting graduated from such renowned university all at the cost of literally nothing from us.



**Selin Sultan**  
**Uckayabasi** from  
TUNEM 2018

First I would like to point out that I am honored to be a TUNEM member and a Tsinghua University student. It has been a great adventure since I got here. Every single day I am learning and having fun at the same time. Best experience ever!

Tsinghua University is one of the best universities in the world and the campus is great! In our department, we have the best professors and the most concerned and helpful office staff. We are provided everything.

I love my life in China. I love Chinese people also that's why I am passionate about Chinese language and hopefully I will be able to learn it before I leave so I can work in a job where I can be connection between my country and China.



**Ramadhan Valiant**  
**Gill S.B**  
from TUNEM 2019

I am very grateful and honored to be part of the TUNEM family in Tsinghua University, one of the best University in the World. TUNEM is an excellent program that is formed by the best nuclear companies of China and Tsinghua University (THU). All the encouragement and the supports are so terrific even in a hard time of COVID-19, the professors and the staff are so amiable and kind. TUNEM program is a soaring opportunity for engineers to study the basics, design, management, construction and the development in terms of nuclear power technology.

Besides the academic part, DEP also encourages international students to get involved in the campus. I gained experience to study about the culture in China by participating in social research about the Yi minority in Yunan. I also joined both football and badminton team of the DEP. Those are very delightful. Thanks to all the professors, staff, colleagues and friends for all the memories and sharing.



**Zahabi Mustafa**  
from TUNEM 2019

TUNEM is an opportunity like no other. It is a nuclear engineering degree from the best university in China. This opportunity comes with a full scholarship and also backing from the 3 nuclear power companies which exist in China. In addition to this, they offer practical experience in the internships, which is real-life application of the skills developed which will further open career opportunities. The campus life, cultural exposure, and the ability to meet many people from around the world is truly remarkable. Unfortunately, COVID-19 has limited my personal experience in China, however I would still recommend the program to anyone looking into the nuclear industry and interested in world culture.



**Muhammad**  
**Waqar Azam**  
from TUNEM 2019

It is an honor for me to be a part of China's top university, in fact one of the best universities in the world. The moment I stepped into Tsinghua, it felt like a dream came true. To be a TsinghuaRen and a TUNEMer, it seems like I am very lucky where I got many chances to excel and gain knowledge in my field. TUNEM did not only provide me opportunity to gain technical knowledge but also to know more about China, its culture and history. One of the best things being part of the TUNEM program is that I got a lot of opportunities to interact with China's three main nuclear power companies i.e. CNNC, SPIC and CGN that helped me to know more about latest research and trends in nuclear field. In short, TUNEM program provided me opportunity to get better and better in every walk of life including education, sports, volunteer work, culture exchange etc. I must say that I am enjoying my life in big & beautiful campus of Tsinghua.

It is also pertinent to mention that all the teachers, staff and three companies are very supportive and always willing to help. I would also like to appreciate the Department of Engineering Physics and three companies for their untiring efforts during pandemic which will make sure to complete our degree in time. I would strongly recommend everybody who wants to pursue education in nuclear field to apply for TUNEM program.



**Dzovor Yvonne**  
**Sefakor**  
from TUNEM 2019

Being part of the TUNEM Program in Tsinghua University, the top university in China, is a wonderful opportunity that I would not take for granted. It is an honor to be part of the TUNEM family.

I belong to TUNEM 2019. My batch is unique because of the pandemic we all experienced. This changed the conventional way of learning. I personally had to study online all the way from Ghana and waking up at odd times to join classes. Despite this, I was able to enjoy the courses that were taught and understood the basics of nuclear engineering that the program offered. I also experienced the first online internship ever organized for TUNEMers. It taught me that we as humans are not limited and that I can achieve anything when I'm focused.

I am bold to say that the TUNEM program has opened China and its rich culture to me. The few months I've stayed allowed to to understand Chinese who are hardworking and lovely people.

Studying in the beautiful Tsinghua campus is a once in a lifetime experience. I will never forget the beautiful autumn season in Tsinghua and the delicious canteen food. China is the first country that I've experienced bicycle traffic. It's amazing!!

I want to thank everyone involved in the TUNEM program for giving their time and efforts in enriching our knowledge within the nuclear industry and offering us wonderful Chinese experience. I appreciate your efforts!



**WE ARE WAITING FOR YOU IN TSINGHUA**

**我们在清华大学等你**







清华大学  
Tsinghua University

## CONTACTS

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### FOR ADMISSION

Graduate Admission Office, Department of Engineering Physics

☎ 86-10-6278 2677    ✉ gwyjs@tsinghua.edu.cn

Graduate Admission Office, Institute of Nuclear and New Energy Technology

☎ 86-10-6277 1089    ✉ hyjyk@tsinghua.edu.cn

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### FOR VISA OR CAMPUS LIFE

International Students & Scholars Center, Tsinghua University

☎ 86-10-6278 4857    ✉ iso@tsinghua.edu.cn

### FOR THE RECOMMENDATION LETTER FROM CNNC, SPIC OR CGN

CNNC

✉ huangyuliang@czec.com.cn | tangjian@czec.com.cn  
fuqiang@czec.com.cn

SPIC

✉ lidan03@spic.com.cn | liyunjian@spic.com.cn  
shiyubo@spic.com.cn

CGN

✉ zhang-meng@cgnpc.com.cn | wangk@cgnpc.com.cn

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