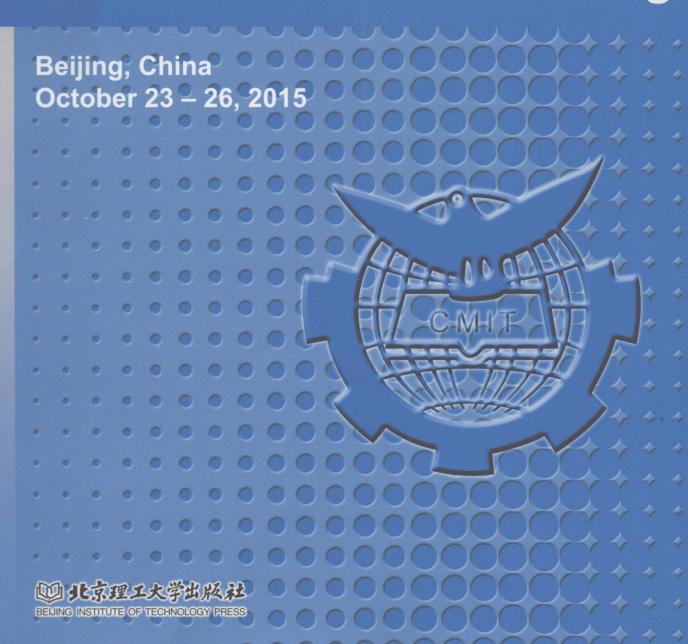




Proceedings of the 11th International Conference on Modern Industrial Training

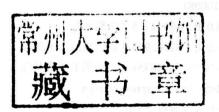
Modern Industrial Training and Innovative Personnel Training



Proceedings of the 11th International Conference on Modern Industrial Training

Modern Industrial Training and Innovative Personnel Training

Edited by Ding Hongsheng, Fu Tie, Xue Qing and Su Wei



◎北京理工大学出版社

BEIJING INSTITUTE OF TECHNOLOGY PRESS

图书在版编目 (CIP) 数据

现代工业培训与创新人才培养: 第十一届现代工业培训国际学术会议论文集 = Modern Industrial Training and Innovative Personnel Training: Proceedings of the 11th International Conference on Modern Industrial Training: 英文 / 丁洪生等主编. 一北京: 北京理工大学出版社, 2015.10

ISBN 978-7-5682-1386-8

I. ①现… II. ①丁… III. ①工业技术-技术培训-国际学术会议-文集-英文 IV. ①TB-53

中国版本图书馆 CIP 数据核字(2015)第 242718 号

出版发行 / 北京理工大学出版社有限责任公司

社 址 / 北京市海淀区中关村南大街 5 号

邮 编 / 100081

电 话 / (010) 68914775 (总编室)

(010) 82562903 (教材售后服务热线)

(010) 68948351 (其他图书服务热线)

网 址 / http://www.bitpress.com.cn

经 销/全国各地新华书店

印刷 / 三河市华骏印务包装有限公司

开 本 / 880 毫米×1230 毫米 1/16

印 张 / 47.5

字 数 / 1251 千字

版 次 / 2015年10月第1版 2015年10月第1次印刷

定 价 / 268.00元

责任编辑 / 梁铜华

文案编辑 / 梁铜华

责任校对 / 周瑞红

责任印制 / 王美丽

Honorary Chairman

Guo Dongming

China Academy of Engineering, Academician Dalian University of Technology, President

Conference Chairmen

Zhao Changlu Wai Ping Kong Beijing Institute of Technology, Vice-President

The Hong Kong Polytechnic University, Vice-President

Organizing Committee

Co-Chairmen

Xiang Changle Tam Wai Man Beijing Institute of Technology, Vice-Presidnet

The Hong Kong Polytechnic University, Associate Director of

Industrial Centre

Conference Secretaries

Fu Tie

Beijing Institute of Technology

Wong Tak Fai

The Hong Kong Polytechnic University

Vice Conference Secretaries

Su Wei

Beijing Institute of Technology

Chan Ka Yin

The Hong Kong Polytechnic University

Academic Committee

Co-Chairmen

Ding Hongsheng Lau Wai Man Beijing Institute of Technology, Director of Engineering Training Center

The Hong Kong Polytechnic University, Associate Director of

Industrial Centre

Members

Chen Junruo

(sorted by the first letter of surname)

Banting W. P. Sze Freete

Cao Qixin

Freetech Road Recycling Corporation Shanghai Jiao Tong University

Kunming University of Science and Technology

Chenn Zhou Purdue University

Fu Jianzhong Zhejiang University

Fu Tie Beijing Institute of Technology
Guo Dongming Dalian University of Technology

Han Jianhai Henan University of Science and Technology

He Gaiyuan Tianjin University

Hu Qingchun South China University of Technology

Hu Qingxi Shanghai University

Hua Yuan Sino-Europe Industry Technology Consulting Jianrong Sun Macau University of Science and Technology

Jiang Yijian Beijing University of Technology

KL Choy Hong Kong Logistics Association

Lee Styger University of Wollongong Li Bolin Southwest Jiao Tong University

Li Shuangshou Tsinghua University

Li Xiaodong China Univesity of Petroleum (East China)

Li Yan Xi'an University of Technology Liang Yande Dalian University of Technology

Lin Jianping Tongji University Lin Pinghua Southeast University Lin Youxi Fuzhou University Liu Huixia Jiangsu University

Louis KP Chu The Hong Kong Polytechnic University

Sichuan University Luo Yang

Changchun University of Science and Technology Mao Zhiyang

Masaki Shiroshita Mitsubishi Electric Automation Ltd.

Mike Stefan Töller BFW (Berufsförderungswerk Oberhausen im Nordrhein-

Westfälischen Berufsförderungswerk e.V)

Peter Gorzyza Bosch Rexroth AG

Reiner Dudziak Bochum University of Applied Sciences

Ren Zhengyi Harbin Engineering University Sampson Poon Institute of Vocational Education

Sun Kangning Shandong University

Sun Oihan Tianjin Occupation Technology Normal University

Wang Jing Xi'an Jiaotong University

Wang Liang Beijing University of Aeronautics and Astronautics

Xing Zhongwen Harbin Institute of Technology

Yang Yuhu Tianjin University

Yao Xianhua Taiyuan University of Technology

Yin Xianming Southwest University of Science and Technology Yu Huadong Changchun University of Science and Technology

Zhang Wenjian North China Electric Power University Zhang Xiaohui Xi'an University of Technology

Zhang Yuanming Southeast University

Zhou Shiquan Huazhong University of Science and Technology

Hefei University of Technology Zhu Huabing

PREFACE

The International Conference on Modern Industrial Training (CMIT) was inaugurated in 1986. It serves as an international platform of academic exchange for the engineering education institutions and industries. In order for the development of engineering talent and international modern industrial training, we share views and ideas on the results of hands-on engineering education and of practical teaching, and we exchange and discuss new concepts, new pedagogies and new developments. In the past 30 years, CMITs were held successively in Guangzhou, Nanjing, Wuhan, Xi'an, Jinan, Beijing, Chongqing, Hong Kong, Nanjing and Dalian. In October 2015, the 11th CMIT, jointly organized by Beijing Institute of Technology (BIT) and The Hong Kong Polytechnic University (PolyU), will be held in Beijing, China.

The 11th CMIT will keep the objectives of the CMIT, to create an idea-exchange platform and an academic atmosphere for all participants. The theme of the 11th CMIT is "Modern Industrial Training and Innovative Personnel Training," including the following topics:

- Latest developments of engineering education and industrial training
- Future needs of human resources development for industry
- Faculty training and team building
- Training model and operation management
- Training pedagogy and assessment system
- Infrastructure building and the use of technology in engineering education
- Industry-academia partnership and international collaboration

We sincerely appreciate the contribution of all participants, experts, co-authors, advisory committee and organizing committee.

We sincerely appreciate all sponsors.

We sincerely appreciate Beijing Institute of Technology Press for the effort of publishing the 11th CMIT proceedings.

We sincerely appreciate Ma Shuqi, Zheng Yi, Pang Lu, Yin Ying and Li Chunyang for their hard work and contribution on the document filing, classification and proofreading of 11CMIT proceedings.

Finally, we wish the complete success of the 11th CMIT.

Editors October, 2015

PREFACE

The international Conference on Modes of Landa technology of CMT) was insugarant of Witch secretarian for oal platform of academic exchange and lice engine and california and included to the first of engineering taken, and to the constant advertises and the development of engineering taken, and to the present industrial transfer on the second to the constant of the first of the first of the first of the constant of the constan

the 11th CMIT will-loap the objectives that CMI) the reason idea-explaings platform as a training strong platform as a training strong for all participants. The third of the CMI is a Mode of tradastrial Training and broken in a Borsonnel Training. Including the following cone.

- Latest developments of engineering as a runs and and strait training
 - . I atoms noted of human resources in a respect our requelty
 - e barnity miking and ream building
 - an array model and operation managers as
 - a Tentang palakngy and assessances seems
- ongrepha gair siniggs iri y . John out to ber adi ban gmbliud sumantentin 💌
 - us irrematellese tous au respeci les a miderentras aimetarias crisulesi sa

We sincerely approxime the contributor of all participants, expens, co-authors, id-i my committee, are an armittee.

A in senior of the reministrative vibration is a W.

We succeedy appreciate Beijing Leanth of a chardage for the effect of publishing the effect of publishing the effect of publishing the effect of publishing the effect of the effect of

Micsi**ncorely appreciate/Ma Shuq**e. There can Sung Law Yong and Ludioneyuser for dearty, of conformal and contractions of contractions and the document filings, observing the endance or an another the document filings, observing the endance or an another the contraction of the c

if and two wish the complete success of the first in the complete.

Editors December 2011

CONTENTS

Session A Latest Developments of Engineering Education and Industrial Training

Advanced Computer Simulation and Visualization for Industry Training	2
Chenn Zhou	3
Outline of the Japanese Vocational Education & Training (VET) Systems and on-the-job Training	
(OJT) Activity for VET Instructors	
Tuji Futukawa	12
Engineering Practice Ability Boosting the Cultivation of Engineering Innovative Talents	
The binding of the bi	20
Knowledge System of the Course in "Engineering Materials and Mechanical Manufacturing Basis"	
Based on the Nearly Practical Curriculum Features	
Sun Kangning, Zhang Jingde, Li Aiju, Fu Shuigen, Zhu Huabing, Xing Zhongwen, Zhang Yuanming	20
and Luo Yang	28
Discussion of the Teaching Methods for Engineering Cognition Based on General Education	
Zira Traubing, Duo Trong and Quant ongain	35
Constructing the New Metalworking Curriculum System for Adapting to Aims of the Talent Cultivation	
Xing Zhongwen, Han Xiuqin, Hu Xiuli, Lei Chengxi, Yang Hongliang and Du Lijuan	40
Research and Implementation of Interdisciplinary Innovation Practice Project	
Zhang Wenjian, An Liqiang and Fang Jing	46
On the Knowledge System of Mechanical Basic Courses and Engineering Training for Art and	
Design Majors	
Xu Xianghong, Zhou Xiaojiang, Zhao Yanbo, Xiao Jinhua and Ye Feng·····	50
Teaching Reform of Engineering Training to Cultivate Engineering Talents	
Zhang Hongzhe, Liang Yande and Dai Minghua ······	56
Study of Creational Practice Education Method	
Wang Tan, Fu Shuigen, Chu Xiao and Fu Ruixue	51
Design of Nondestructive Testing Courses for College Students in Engineering Practice Ability	
Wu Jianbo, Liu Shengqing and Luo Yang	54
Exploration and Practice for Transformation and Upgrading of Excellent Resource Sharing Course	
Named "Mechanical Manufacturing Engineering Training"	
Li Yan and Liu Shunyao	59
On Teaching Reform of Metal Processing for Aerospace Major	
	75
Study of Metal Technology Curriculum Systems of Mechanical Engineering	
Bao Jun, Xing Zhongwen and Han Xiuqin	78
Exploration and Application of Practice Teaching Model to College Students Based on Project Driven	
Huang Junqin, Zhang Xiaohui and Zheng Meng	81
Research and Exploration on Engineering Education Based on the Integration of Engineering and	
Maker Culture	
Hu Fuwen and Xu Honghai	86
Exploration of the Engineering Ability Training Mode in the Artistic Design Specialty Majors	
Zhou Xiaojiang and Xu Xianghong	90

Research on Engineering Practice Curriculum System and Innovative Training Model	0.0
Lei Yarong, Zhang Xiaohui, Zheng Meng and Huang Junqin · · · · 9	6
Exploration of Collaborative Innovation About Textbooks and Series Courses of Engineering Materials	
and Machinery Manufacturing	
Li Fangjun, Yu Yuan and He Yadong · · · · · 10	2
A Study on the Curricular Contents of Metal Technology Based on Engineering Education Accreditation	
Han Xiuqin, Xing Zhongwen and Bao Jun · · · · · · · · · · · · · · · · · · ·	6
Research on Metalworking Course Content System of Material Forming Professional	
Cai Zhigang, Yang Hongliang, Han Chengshun and Xing Zhongwen	9
Teaching Research Practice on Mechanical Manufacturing Fundamentals Based on the Training	
of Outstanding Engineers	
Zhao Lihong, Wu Bin, Huang Xuemei and Yang Liping	2
Virtual Machining for Typical Workpieces to Enhance Engineering Training Curriculum	
Huang Xuemei, Zhao Lihong, Tong Yongxiang and Wu Bin 11	6
Research of Curriculum System Establishing on the Modern Electronic Technology Training	
Chen Ze, Song Sufang, Xiao Huan and Gao Pengyi	1
Exploration of Engineering Culture Education in Engineering Training	
Xi Yun, Kang Hua and Wang Lianchao 12	6
Reform on the Integration Teaching of Theory and Practice of NC Lathe and Engine Lathe on the	
Base of Engineering Education	
Yan Zhou	0
Design of Virtual CNC Milling Simulation for Teaching the Modern Manufacturing	
Chen Dalin·····13	5
Teaching Practice and Innovation Exploration of Bicycle Disassembly and Assembly Experiment	
Wang Qiang, Liao Qing and Zhang Lihong · · · · · · 14	0
Teaching Reform and Practice of Fundamentals of Machinery Manufacturing Technology Based on	
CDIO Education Concept	
Wang Lihua, Li Li and Wu Xiaoqiang · · · · · · 14	3
Research on Engineering Training Cultivation Mode Based on CDIO	
Bi Haixia, Wang Wei, Ma Yuqiong, Feng Huijuan, Zheng Hongwei and Zhang Yanrui · · · · · · · · · · 14	8
Maker Culture Under the Engineering Training — Introduction to Maker Spirit Reflected in the	
Teaching of the Casting	
Xing Xiaoying, Tang Bin, Ma Yun and Zhang Ziguang 15	3
Improve Challenges of the Engineering Training Course to Cultivate Students Creativity and	
Innovation Ability	
Chu Xiao, Liang Zhifang, Yang Xinghua, Gao Jianxin and Liang Yingchun	7
Application of "Flip Classroom" in "Modern Processing Technology and Practice" Xu Weiguo, Li Rui, Zhang Xiuhai, Yao Qiming, Gao Ju and Wang Qun·······16	
Xu Weiguo, Li Rui, Zhang Xiuhai, Yao Qiming, Gao Ju and Wang Qun······16	1
Practice and Exploration on Professional Courses System of DCSFC in Training the Innovative Talents	
Dong Jiong, Lv Yi, Xiao Feng and Zhang Ming · · · · · 16	6
An Instance of a Ground Simulation Experiment Device of the Moon Landing Buffer Component	
to Innovative Training Wang Shaochun, Du Lijuan, Cai Zhigang, Wang Xiaoxiang and Zou Yongwei	1
Building Project-based Teaching System to Explore Engineering Education Training Yu Hanqi, Wu Jinqiu, Li Peijuan and Chen Dulin	
Yu Hanqi, Wu Jinqiu, Li Peijuan and Chen Dulin · · · · · · 17	5
CAD/CAM Practicum Designed for Mass-customization Manufacturing Under the New	
Technological Revolution	
Ding Xiaoyu and Liu Shaoli 18	0
Practice Experience of Introduction to Industry Course and Practice for College of Foreign Language Students	
Wu Jianhua, Liu Yanling and Liu Lingling · · · · · · 18	4

gardina T Isomora S svilla CONTENTS was T is made at a show

The Exploration of Industrial Robot Teaching in Engineering Training System	
Li Yanlin, Wang Guochao, Yang Xiao and Hu Rong · · · · · · · · · · · · · · · · · · ·	89
Reformation and Practice of Three-dimensional Printing During Engineering Training with the Idea	
of CDIO Court the Processing Technology of Engineering Training CNC Equipment Network	
Fu Junjie, Li Fangjun, Kang Jingxin and Yu Yuan	
Consideration on Synergetic Development of "Engineering Materials and Fundamental of	
Mechanical Manufacturing Course"and "Engineering Training" Wang Hongyu, Liu Huixia, Fan Shutian, Yuan Xiaoming and Wu Bo	98
Autonomous NC Practice Teaching Research Based on the Task Driven Mode	70
Yu Liang, Li Enpu, Zhao Hongzhang, Zhao Chunsheng, Du Zeming, Zhang Songtao and	
Zhou Danwen · · · · · · · · · · · · · · · · · · ·	ი2
Development of the Distributed Waste Collection and Recycling System: Training on "Industry 4.0"	02
Alex Whchoy, Kwok Ho Chun, Leung Wingyan, Hung Hiuyee, Ting Hungkuen, Shiu Tszyan and	
Tam Wingvin	ns
Tam Wingyiu 20 Training for Public Health and Plumbing Practice	00
SW Wong 2	12
ne Corneration and Functions of Excellent Engineer Program in Colversity Talent Custivation	12
Session B Future Needs of Human Resources	
Development for Industry	
The Development of Engineering Training Center Driven by Makers	
Li Shuangshou, Wang Deyu and Yang Jianxin 2	19
Inheritance and Innovation of Training Mode for Developing Students' Engneering Practice Abilities	
He Gaiyun, Ding Baihui and Fan Shengbo 22	25
Exploration of the Correlation Between Mechanical Manufacturing Fundamental Courses and	
Professional Training in Mechanical Major Lin Jianping, Fu Shuigen, Wen Yuanyuan and Wang Kun 22	29
Study on the Sustainable Development of Engineering Training Center	
Study on the Sustainable Development of Engineering Training Center Ren Zhengyi and Liu Sijia	37
Engineering Training Base Construction and the Development of a Number of Thinkings Zhu Min, Wang Wenling and Feng Xiaoping	41
Base Construction on Cultivating Qualified Engineering Talents	
Wang Zhihai and Shu Jingping 24	15
Development of Students' Human Resource	
Liu Youhe spinker I sand 24	19
Teaching Arrangement and the Equipment Used on a Practical Course Named "Controlling	
Technical Training"	
Ma Pengju, Qiu Yuting, Li Jian and Jin Yongwei	53
Exploration on Curriculum Reform of Engineering Training	
Liu Sijia and Yang Oian · · · · · · 25	58
Engineering Training Reform and Practice Based on Concept of CDIO	
Chen Qi, Wu Bo, Xu Enjiang, Huang Yanfang and Zhao Jing	54
Significance of Metalwork Courses to Modern Talents Cultivation	
Yang Hongliang, Hu Xiuli and Xing Zhongwen · · · · · 26	59
Some Thinking in Training Talent Undergraduate Students for Industry 4.0 in University	
Zhao Shuang, Zhang Yi and Li Xueqin · · · · · 27	72
Study on the training Mode for High-end Equipment Manufacturing Industry Mechanical Engineer	
Ma Baoji, Li Wei, Ning Shengke, Wang Xiaocui and Wang Dangli	
The Research and Practice on Model Based of 3D Printing and the State of the State	
Zhang Lihong and Lai Sigi	30

	Practice in Strengthening College Students Engineering Ability Based on trepreneurial Project	
	Gao Ju, Li Shuangshou and Yang Jianxin ······	.284
Study on the	Processing Technology of Engineering Training CNC Equipment Network Song Ke and Xu Zhongyang	
	e Professional Post of the Internet of Things in Modern Engineering Technology	
	ng, Xiao Meng, Ye Chongkai and Zhao Deng	
	ractice and Innovation Ability Development on CAD/CAM Subject	
Liu Shaoli a	nd Ding Xiaoyu	.298
	Session C Faculty Training and Team Building-Up	
Exploration of	n Team Construction of Engineering Training Center of High School in China heng, Fu Tie, Ma Shuqi and Pang Lu	.305
Construction	of Triangle-quality Teachers Based on Outstanding Talent Cultivation	303
Zhou Va L	I Jianwei and Wang Xishe	.309
	on and Functions of Excellent Engineer Program in University Talent Cultivation	307
	iu Shengqing and Mei Xiaoqin ······	.312
	and Exploration of Tacit Knowledge and Case Teaching in Engineering Education	512
	to Lihong, Han Yongjie, Li Chong and Wang Limin ·····	.317
Thoughts of E	ngineering Training in China's Undergraduate Education	
	and An Guoping	.322
	the Construction of Teaching Staff to Promote the Engineering Training	
Center Trans	ormation from Teaching Model to Teaching & Researching Model	
Wang Fulia	g, Liu Huixia, Fu Shuigen, Yan Zhang, Shen Zongbao and Sun Zhiquan	.326
Cultivating H	gh-level Metalworking Teaching Team by Discipline Construction	
Hu Xiuli, X	ng Zhongwen, Yang Hongliang and Fu Shuigen ·····	.331
The Important Tong Jie · · ·	ce of Administrative Secretary in the Team Construction of Engineering Training	.334
Effective Mea	sures to Build Up a High-quality Staff Team for Engineering Training Center in	
Chongqing U	iversity and the state of the s	
Luo Jing, R	n Hengbin and Cao Xuezhu	.337
	ne Current Situation and Countermeasures of University Engineering Experiment	
Teaching Per	onnel Training	
Teng Xiaoc	un, Tian Jingmei and Guo Zhihong	.342
Discussion on	the "Three Steps" to Improve the Innovative and Practice Ability of College Students	2.40
Miao Qing,	Feng Huijuan, Gao Zhi and Wang Tiecheng	. 349
	and Practice on the Optimum Multi-module EDA Practice Teaching Platform	
Exploration of	Vang Beibei and Gao Jianxing	. 333
Lu Shengli	nd Practice for Virtual Enterprise Practice Base Zhang Yuzhou and Wang Liqiang	.357
	ovement and Engineering Training Reform	
	ng, Chu Xiao, Yang Xinghua, Gao Jianxin and Liang Yingchun ·····	
	struction of Open Mode in Engineering Training Center	
Cao Xuelu	nd Zheng Zhijun · · · · · · · · · · · · · · · · · · ·	.365
Introducing N	aker Culture in Engineering Training Center at Chongqing University	
Cao Xuezhi	, Luo Jing and Cheng Xiurong	.370
	ne Engineering Training Center with Its Own Characteristics A no sollogist bing decisions.	
Zhou Qing,	Gao Xiang and Hu Jiande·····	.377

CONTENTS TO BE THE STATE OF THE

Application of Project-driven Method in Engineering Training and property to the state of the st	
Shi Chengkun, Zhang Xinghua, Liu Yajing and Ma Pengju	
Construction of Modern Engineering Training Center Fan Xiaojing	
Research on the Engineering Training Practice Teaching Quality Monitoring Method Under the	
Open Model Ma Yuqiong, Zhang Yanrui and Bi Haixia	
ivia ruqiong, Zhang ramur and Bi riaixia	300
Session D Training Model and Operation Management	
Research in Engineering Training Modes with Modular Engineering Skills Training + Project Driven	205
Wei Deqiang, Lv Rujin and Liao Weiqi	393
Study on Mode of Quality Assurance in Engineering Training Based on Process Control Wang Weixin	399
A Study on the Re-innovation of Teaching System in Engineering Training	
Tong Xingsheng and Yu Wuxin	404
Cultivating Students' Overall Qualities Via Involving Contest Projects into Engineering Training	
Han Xiuqin, Yang Hongliang and Bao Jun	408
Engineering Training Education Innovation Based on Outstanding Engineers Training	
Hu Xiuli, Yang Hongliang and Xing Zhongwen	412
Study on Engineering Training Information Platform and Engineering Training Mode	Qual
Li Zhanlong, Ding Hongsheng and Fu Tie	
Exploration on Teaching Management System of Open Engineering Training	
Feng Huijuan, Zhang Yanrui and Miao Qing	
An Investigation of Deepening College Students' Extracurricular Independent Practice	
Zhang Chunmei, Wang Jing and Sun Xiaoxing	
Promoting the Development of Engineering Training Programs in Curriculum Construction	
Tang Jie and Xu Zhinong	
The Construction of Metalworking Series Curriculum System for Energy Engineering Professional	
Yang Hongliang, Han Chengshun, Cai Zhigang and Xing Zhongwen	
Study and Practice of NC-based Vocational Skills Training and Teaching Mode Virtual	
Simulation Technology as large and the grant to seeme a not formed a morniscossist no notestassist unitary	
Liu Zhifei, Ma Jianmin and Liu Zhendong	
PM-ET Method: a Product-based Engineering Training Program in Universities	
Wang Deyu, Zuo Jing, Gao Ju and Zhang Xiuhai	
The Construction on National Excellent Resource Sharing Course of Engineering Training	
Li Xiaoyun, Tian Jie, Zhu Huabing, Xi Yun and Qian Pengan	440
Student Construction Project	. 451
W.C. LEE and K.K. LEE	
Study on the Independent Innovation of Engineering Training Teaching System Within Open Mode Wang Wei, Zheng Hongwei, Wang Hailong and Ma Yuqiong	. 151
Building Campus Engineering Cultural Landmark Based on Engineering Training Center	
Li Cuichao, Cao Qixin, Zhang Peiyan and Lu Shunshou	
The Investigation of the Opening Teaching Model of Engineering Innovation Training	430
Ma Jin	
Research and Practice of Engineering Training Open Teaching and Management Mode	
Zhang Yanrui, Zheng Hongwei, Wang Wei, Ma Yuqiong and Feng Huijuan	
Model Research on Organizing Competitions on Campus to Elevate Effect of Engineering Training	.07
Wu Zhenghong, Wang Jianming, Zhu Jianneng, Zhou Jiwei and Lu Yaohui	474
172	

Research on Operation Mode of Engineering Training Based on Production Process
Hu Ruifei, Qin Yuchuan and Luo Yang 479
Research and Practice of Interest-guided Training Mode of Science and Technology Innovation
Ability of College Students
Wang Xu, Liu Li and Wang Jianwu 484
Construction and Implement of Industrial Training Information Management System Based on
Modern Enterprise Mode State of the Modern Enterprise Modern Enter
Xu Wangbei, Shen Zhaokui, Liu Lingling, Liu Nan and Wang Xin
Practice and Thought on Flipped Classroom in the Engineering Materials and Thermoforming
Technology Course a sample pallor guitarous a testado de ses ododo guitaros guitaronigo de deservos
Shu Qing, Shao Junpeng and Xu Xiaocun ······492
Using the Resource Superiority in Competition as Curriculum Model for Cultivating Innovative
Talents with Engineering Technology
Wang Dongxiao, Zhang Lijun, Su Wei and Zhang Zhonglian · · · · · · 496
A New Education Mode Based on Humanoid Robot Innovative Practice Teaching
Leng Chuntao, Fang Bo and Cao Qixin500
Session E Training Pedagogy and Assessment System
ocasion E Training redagogy and reaccontont by stem
The Exploration of the Research Universities' Courses to Engineering Practice and the Standards for
Quality Evaluation about guinest pairmonign. The conclude associated guinest guinest guinest guinest as route
Cao Qixin
Investigation and Teaching Practice on the Evaluation of Engineering Training Teaching Effectiveness Zhou Shiquan, Zhao Yi, Li Zhiyong and Yang Qing
Constructing Tridimensional Engineering Training Innovation System Through Scientific and
Technological Innovation Activities
Zhang Yingqi, Wu Yahui and Deng Xiaoling
Investigation on Training Mode on Active Practising Combining with the Textbook Guiding
Zhou Shiquan, Zhao Yi, Li Zhiyong and Yang Qing
Study of Developing Innovative Engineering Practice Teaching Evaluation System
Shao Junpeng, Shu Qing and Yang Shucai
Innovation Discussion on Assessment Method for Course of Engineering Materials and dominated account of the Course of Engineering Materials and dominated a
Fundamental of Mechanical Manufacture
Li Aiju, Liu Yan, Sun Kangning, Zhang Jingde, Sui Rongjuan and Wang Weiqiang537
Strengthen the Virtual Simulation Teaching System, Improve the Practical Teaching Level
Ma Jianmin, Li Xiaodong, Liu Zhendong, Liu Zhifei and Liu Dongdong ·······541
Study on Teaching Quality Guarantee System of Engineering Training Curriculum
Fu Tie, Ding Hongsheng, Ma Shuqi and Zheng Yi
Comprehensive Development of Students Driven by the Scientific and Technological Innovation
Su Wei, Ding Hongsheng, Xue Qing, Fu Tie and Liu Zhibing
Experiment Teaching Reform Research and Practice of Industrial Control
Song Ke, Zheng Zhijun and Luo Jie
Application of New Technology in the Reform of Engineering Training Teaching
Cao Feng, Xing Dixiong and Cui Weiqing
Exploration and Research on Welding Comprehensive Training
Yao Qiming, Gao Dangxun, Huang Jicai and Qi Xiaopeng ·······562
Teaching Concepts and Scheme Design for Research-based Engineering Training
Yuan Haiyan and Liu Run
Primary Exploration of Reverse Engineering Training in the Engineering Training Teaching
Lei Chengxi, Han Chengshun, Song Jianwei and Xing Zhongwen ·······571

CONTENTS and Secret CONTENTS

Exploration and Research on the Engineering Training Curriculum Standards with Aerospace	
Features	
Liu Run, Wang Shuxing and Zhang Li·····	576
The Design of Heat Treatment Comprehensive Experiment Based on the Ideals of Outcome-based	
Education	
Wang Jianmin	581
The Interaction Practice of Engineering Training Education & the Competition	
Ma Shuqi ·····	585
The Application of Virtual Simulation Technology in Engineering Training	
Liu Zhendong, Ma Jianmin, Qu Benquan and Liu Zhifei · · · · · · · · · · · · · · · · · · ·	590
A Product-based Engineering Training Program with Multiple Machining Processes	
Zhang Yuyi, Wang Deyu, Yang Jianxin and Zuo Jing ·····	. 596
Practice Teaching Methods and Evalution Strategies Based on Desktop 3D Printer	
Tao Zeliu, Wang Lianchao, Zhou Xiaoshuai and Xu Haiyun ·····	601
Study and Practice on the Teaching Methods of NC Machining Training	
Li Chunyang, Fu Tie and Zhu Zhaohui	. 607
Practice Education Quality Evaluation Based on Parallel Genetic Algorithm Elman Neural Network	
Jin Cuihong	611
Practice and Research in the Synthetical Course of Engineering Technology Based on Project	
Driving	
그는 그리는 사람들은 그는 그를 가는 사람들이 살아보고 있다면 그를 하고 있다. 그를 하고 있다면 그를 하는 것이 없는 것이다.	. 616
Specific Study of Teaching Technique for Engineering Materials Course	
Huang Genzhe, Yu Huadong and Zhu Zhenhua	. 621
Discussion on Comprehensive Quality Cultivation in Mechanical Engineering Training	
Liu Qian, Tang Xiujian and Ba Guozhao · · · · · · · · · · · · · · · · · · ·	. 626
Session F Infrastructure Building and Use of Technology	
zionia medita di salara	
in Engineering Education	
Overall Design and Construction of the Teaching Environment of the State-level Engineering	
Training Demonstration Center	
Zhu Ruifu, Hong Xinwei, Chen Yanjun, Song Sili, Liu Xin, Liu Jian, Zhang Yan and Gao Jianjun ····	. 631
The Design and Application of the Experimental and Practical Teaching Management Information	001
System Based on Campus Card Identity Recognition	
Ma Pengju, Han Yongpeng, Tong Jie and Li Ye	. 638
The Necessity of Enhancing the Advanced Manufacturing Technology Training and Its Practice	050
Ma Pengju, Tong Jie and Zhang Xinghua	. 645
Construction and Research on Engineering Training Center Based on Applied Universities	043
Wei Xianggui, Fu Shuigen, Zhang Keyan, Zhou Weiyuan and Yan Xiaojuan	. 640
Teaching Practice of Numerical Control Machining Based on Boppps	049
Zhou Jiwei, Fan Dapeng, Wu Zhenghong, Wang Jianming and Lu Yaohui	. 651
The Construction of the Engineering Practice Training Platform Based on the Idea of Large-scale	034
Engineer	
Fan Naiqiang, Li Enpu, Wang Zhaoqiang and Zhao Hongzhang ·····	. 650
	. 039
The Virtual Simulation Teaching Connotation Construction of Material Forming Training Zheng Yi, Ding Hongsheng and Fu Tie	662
	. 003
Discussion on the Development of Practical Training and Teaching Platform for Material Forming Zheng Yi, Ding Hongsheng, Fu Tie and Ma Shuqi	. 660
Zheng 11, Ding Hongsheng, Fu 11c and ivia Shuqi	000

Three Dimensional Printing Teaching Practices and Exploration of Innovation System Based on
Three Levels
Qian Jun, Tang Jie and Zhou Jilie669
Satety Management Training Base for Engineering Analysis and Countermeasure
Liu Jianfeng, Ding Jie, Shan Xilin and Liu Hua·····672
Exploration of Cultivating Top Creative Talents in Engineering Training Center Wang Yinling and Deng Hongquan
Concent of a Shared Engineering Training Center
Fu Yun, Yu Wensha, Ren Hengbin and Zhang Wei · · · · · 680
Implementation of a Shared Engineering Training Center for Higher Education Institutions
Fu Yun, Ren Hengbin, Wang Bing and Gao Zhongtao · · · · 684
Exploration and Practice on the Informationization Construction of the Engineering Training
Home Base
Zhao Dagang, Jin Song and Shang Yan · · · · · 688
The Application of Virtual Reality Technology in Engineering Training
Chen Chunyang, Zhang Jingyang and Ge Wang
A Construction of Intelligent Manufacturing Practice Training Based on Industrial 4.0 Model
Luo Zhiyong, Zhang Yi, Guo Xiaohui, Liu Xiangde and Zhao Liming · · · · · · · · · · · · 700
The Construction of Engineering Practice Teaching Video Online Platform
Xu Weiguo, Lou Ouanging, Liu Yi, Ma Xiaodong, Li Yi and Chen Kai
Analysis of Cultivating Excellent Engineers Based on Practical Teaching Workshop
Zhou Kuntao, Wei Renzhe and Chen Xi
Maker, Innovation and Entrepreneurship—the Exploration and Practice of New Cultivation
Mode for Undergraduates
Mao Shufan 713
Research on the Construction of Industrial Robot Practical Teaching Bases in Ordinary
Universities of Technologies
Liu Jinglu, Wang Guochao, Yang Xiao and Hu Rong · · · · · · 718
Publication of Engineering Training Textbooks Based on Teaching Reform
Zhuang Hongquan and Zhao Bin 723
Session G Industry-academia Partnership and
Session G Industry-academia Partnership and
International Collaboration
The Present Situation and Methods of NC Teaching and Equipment Optimization
Zhou Jilie, Zhou Song , Tan Qing and Meng Shengmin
Exploration and Practice of Constructing Engineering Training Teaching Staff
Han Jianhai, Wei Deyin and Zhang Yingqi
Engineering Training of University-enterprise Cooperation Curiculum and Innovation
Ding Jie, Liu Jianfeng, Wu Bo, Mei Mei and Sui Jinling
Analysis and Research on the Status Quo and Development Mode of School-enterprise Cooperation
of Local Application-oriented College and University
Wang Hongfeng, Wang Jianli, Song Weiwei, Shi Yungui and Duan Xinglin · · · · · · · · 741

Session A Latest Developments of Engineering Education and Industrial Training

Session A

Latest Developments of Engineering
Education and ladustrial Traiglag