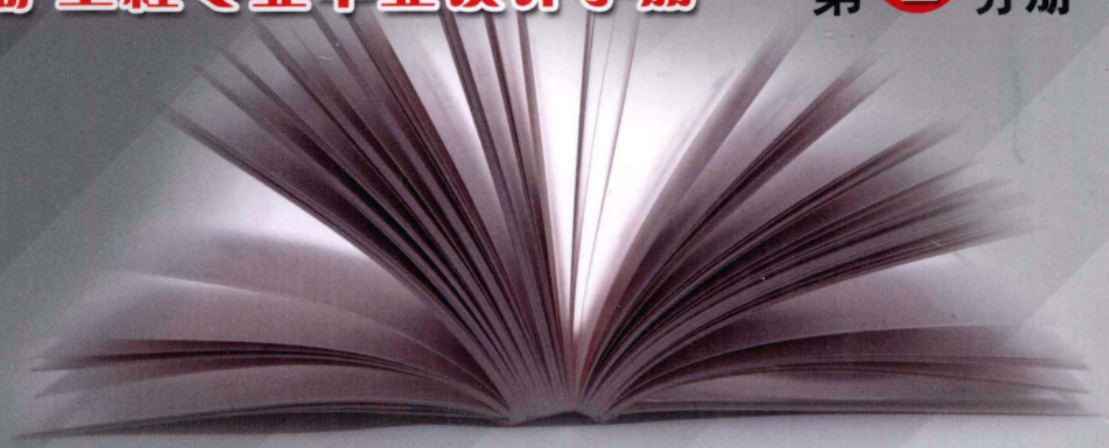
Caikuang Gongcheng Zhuanye Biye Sheji Shouce

高等学校国家级特色专业建设点资助教材

采矿工程专业毕业设计手册 第1分册



采矿专业毕业设计文件

全书主编 林在康 李希海

本册主编 万志军 赵培荣 张东升

中国矿业大学出版社

China University of Mining and Technology Press

采矿工程专业毕业设计手册

Caikuang Gongcheng Zhuanye Biye Sheji Shouce

CAIKUANG ZHUANYE BIYE SHEJI WENJIAN

China University of Mining and Technology Press

责任编辑 何 戈 封面设计 肖新生

ISBN 978-7-81107-887-9

9 787811 078879 >

总定价：680.00 元（共8册）

高等学校国家级特色专业建设点资助教材

采矿工程专业毕业设计手册
（第一分册）

采矿专业毕业设计文件

全书主编　林在康　李希海
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内 容 提 要

本书在介绍采矿工程专业毕业实习、毕业设计、毕业设计图纸的要求的基础上，对毕业设计说明书的格式、毕业设计答辩和成绩评定办法等方面的内容进行了较为详细的介绍，并汇编了常用煤炭科技名词和煤矿工业矿井设计规范。

本书可作为高等学校采矿工程专业毕业生的参考资料或使用手册，亦可供采矿工程技术人员参考。

图书在版编目(CIP)数据

采矿专业毕业设计文件/万志军，赵培荣，张东升主编.
—徐州：中国矿业大学出版社，2008.3
（采矿工程专业毕业设计手册；1/林在康，李希海主编）
ISBN 978-7-81107-887-9

Ⅰ.采… Ⅱ.①万…②赵…③张… Ⅲ.煤矿开采—毕业设计—高等学校—教学参考资料 Ⅳ.TD8

中国版本图书馆 CIP 数据核字(2008)第 041079 号

书　　名　采矿专业毕业设计文件
主　　编　万志军　赵培荣　张东升
责任编辑　何　戈
责任校对　杜锦芝
出版发行　中国矿业大学出版社
（江苏省徐州市中国矿业大学内　邮编 221008）
网　　址　http://www.cumtp.com　**E-mail**:cumtpvip@cumtp.com
排　　版　中国矿业大学出版社排版中心
印　　刷　徐州中矿大印发科技有限公司
经　　销　新华书店
开　　本　787×1092　1/16　**本册印张** 20.25　**本册字数** 504 千字
版次印次　2008 年 3 月第 1 版　2008 年 3 月第 1 次印刷
总 定 价　680.00 元(共 8 册)

全书总前言

采矿工程毕业设计是采矿工程专业学习的重要教学实践环节。

毕业设计分一般部分和专题部分。一般部分是按实习矿井的地质条件，完成一个矿井的初步设计的主要内容，毕业设计一般部分必须按照毕业设计大纲的要求进行，完成大纲规定的全部工作量。毕业设计的专题部分是针对理论上或生产实际中某一具体问题进行较为深入细致的设计和研究。

学生进行毕业设计时，除了参阅相关的教材（例如《采矿学》、《井巷工程》）外，还需要参考大量的资料，例如《煤炭工业矿井设计规范》、《煤矿安全规程》、《煤炭建设井巷工程基础定额》、《煤炭建设井巷工程辅助费基础定额》、《煤炭建设井巷工程辅助费综合预算定额》、《综采综掘高档普采设备选型配套图集》、《煤炭科技名词》等等。

学生进行毕业设计中需要绘制数十张图纸，包括矿井开拓平、剖面图、采（盘）区或带区巷道布置平面图和剖面图、采煤方法图、井筒断面、井底车场、巷道断面、矿井通风系统图等等。绘制上述图形，除了需要矿井的基础资料外，还需要比较完整的标准化的图册，以便于学生根据矿井条件进行选取。

考虑到现有的资料比较分散，各种资料因对象不同也不完全适用于采矿专业毕业生。我们编写了这套《采矿工程专业毕业设计手册》。手册由以下八分册组成：

第一分册　采矿专业毕业设计文件
第二分册　开拓方案主要经济数据
第三分册　采矿设计 CAD 软件及应用
第四分册　井筒断面图册
第五分册　井底车场图册
第六分册　巷道断面图册
第七分册　三机配套图册
第八分册　风机装置性能曲线图册

全书图号统一规定于下（以汉语拼音声母排列）：

CK1WJ101，采矿一分册、文件、图号
CK2KT101，采矿二分册、开拓、图号
CK3RJ101，采矿三分册、软件、图号
CK4JT4—101，采矿四分册、井筒、图号

CK5JD2—001，采矿五分册、井底、图号

CK6HD2—001，采矿六分册、巷道、图号

CK7SJ4—024，采矿七分册、三机、图号

CK8FJ5—101，采矿八分册、风机、图号

考虑到近年来我国煤炭工业发展迅速，全国各地煤矿技术发展、技术力量差异较大，全书在尽可能收集大中型矿井资料、增加最新煤矿设计成果的同时，也注意收集了部分中小型煤矿的设计资料。

编写全书的主要对象是采矿工程专业高年级本科生。因此，书中内容较煤炭企事业单位实际的使用内容有所简化。例如，煤炭企事业单位设计井底车场时，需要对井底车场的方式、线路、坡度闭合、巷道断面、工程量等全面设计。而学生作毕业设计时，因时间精力水平的限制，只需要对井底车场的方式进行选择，参考生产能力和条件相近的矿井，从《井底车场》图册中选取比较合适的图形即可。

考虑到国内煤炭企事业单位中部分煤矿技术人员紧缺，技术资料不全等情况，编写全书的另一目的是部分资料可供煤炭企事业单位技术人员参考。

全书的内容主要由四部分组成：

1. 自编的毕业设计相关技术文件和资料。
2. 自编软件绘制的图形。
3. 已经公开发行的正式出版物中的资料。
4. 从部分煤炭企事业单位收集来的资料。

此外，选取了毕业设计中的一些实例，补充到各分册中，供学生参考。

在此，编者郑重申明，全书的内容主要为采矿专业学生毕业设计中作为参考资料使用，也可供部分煤炭企事业单位技术人员参考。其他人员未经许可不得转用或作商业用途，否则后果自负。

《采矿工程专业毕业设计手册》编委会名单：

全书主编：林在康、李希海

第一分册　采矿专业毕业设计文件

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第八分册　风机装置性能曲线图册

主编：郑西贵、王治太、信晓东

成员：赵一鸣、林在康、杨胜强、姚强岭、武亚峰、王海燕、赵树芬

英文翻译：林妍、董永义

全书在编写中得到山西省煤炭规划设计院大力支持，该院对全书的图形和文字等全部内容进行了全面校对并提出了宝贵意见。煤炭工业西安煤矿设计研究院、中煤国际工程集团北京华宇工程有限公司、中煤国际工程集团武汉设计研究院、江苏省第一工业设计院、山西晋城煤业集团、内蒙古神华集团神东煤矿、补连塔煤矿、石屹台煤矿、神华集团万利煤炭分公司、国投新集矿业集团、皖北煤电集团公司、徐州矿务集团有限公司、平煤集团公司一矿、郑州煤矿机械集团有限责任公司、新疆生产建设兵团农四师71团双新焦化厂煤矿、山西运城市安运风机有限公司、乌鲁木齐瑞安特自动化设备有限公司等单位为本书提供了丰富的资料。在此，向上述单位和相关的人员致以诚挚的谢意！

采矿系部分教师、研究生、采矿1999、2000、2003、2004年级的部分学生参加了全书的部分工作，在此一并致谢。

由于我们水平有限，缺点和错误难免，欢迎批评指正。

编　者

2007年12月

Majors Preface

Graduation design is a most important stage in the whole process of learning for students, who major in coal mining engineering.

It can be divided into two sections, one is for the general, and the other is for the specific. The general section, which is in accordance with the geological situations of underground mine, mainly focuses on the preliminary design of an underground mine, besides, it must comply with the syllabus of the graduation thesis and finishes all the assigned tasks; while the specific section mainly deals with the in-depth design and study of a specific problem in theory or during the process of production.

When conducting the graduation design, not only do the students consult relevant teaching materials, such as *Coal Mining*, *Mining Engineering*, but also turn to many references for help, such as *Norms for the Design of Underground Coal Mine*, *Regulations of Coal-mine Safety*, *Basic Quota of Underground Mine Engineering*, *Basic Quota of Supplementary Expenditure of Underground Mine Engineering*, *Comprehensive Budget Quota of Supplementary Expenditure of Underground Mine Engineering*, *A Collection of Maps Equipped with Comprehensive Mining, Extraction and General Extraction*, *Chinese-English and English-Chinese Mining Science-Technic Dictionary*, *etc.*

During the process of graduation design, students are required to make more than ten drawings, including mining development map, cross-section map, laneway layout map and cross-section map of mining areas or belt areas, mining method map, shaft cross-section, pit-bottom, laneway cross-section, mining ventilation map and so on. In addition to the basic materials of mining, a comparative integral standardized map is also needed when drawing the above-mentioned maps, which in turn facilitates students for alternatives of different mining situations.

Given that materials available are relatively spreading around, not all the materials can adapt to all the graduates majoring in mining, we compile a series of *Graduation Design Handbooks for Coal Mining Engineering Majors*, which consists of eight fascicules:

The first fascicule Documents for graduation design of mining major

The second fascicule Main economic data of the development scheme

The third fascicule mining design CAD software and its applications

The fourth fascicule Shaft cross-section map

The fifth fascicule Pit-bottom map

The sixth fascicule Laneway cross-section map

The seventh fascicule Three-machine equipped map

The eighth fascicule Fan equipment faculty curve map

Numbers for publication are specified alphabetically:

CK1WJ101, the first fascicule, documents, number

CK2KT101, the second fascicule, development, number

CK3RJ101, the third fascicule, software, number

CK4JT4—101, the fourth fascicule, shaft, number

CK5JD2—101, the fifth fascicule, pit-bottom, number

CK6HD2—101, the sixth fascicule, laneway, number

CK7SJ4—024, the seventh fascicule, three-machine, number

CK8FJ5—101, the eighth fascicule, fan, number

Given the rapid development of the national mining industry, the technological development of all the coal-mines, and the great disparities of different techniques, we try to collect materials from large-sized and medium-sized coal-mines as many as possible. Apart from the addition of the latest coal-mine design findings, we also collect materials from small-sized and medium—sized coal-mines.

The main learner of this handbook is the Junior and Senior students of mining engineering; therefore the content has been simplified compared with those used in coal-mine enterprises. For example, when designing the pit—bottom, coal-mine enterprises should take all the following elements into account, namely, the manner, the route, gradient closure, laneway cross-section and the working capacity. And because of limited time and energy, when conducting the graduation design, students are only required to select the manner of pit-bottom, refer to the underground mine which has the similar production capacity, and select the proper map from the pit-bottom map as well.

Given that there is a shortage of technicians in some coal-mine enterprises, and a lack of technological materials, another purpose of compiling this handbook is for the coal-mine technician's reference.

The whole handbook mainly consists of four parts:

1. Self-compiled technological documents and materials.
2. Self-compiled software drawing map.
3. Published materials.
4. Materials collected from some coal-mine enterprises.

Besides, some chosen examples are added to the fascicules for students' reference.

Hereby, we seriously declare that the main content in this handbook is just for reference for both students and technicians in coal-mine enterprises, people can't transfer or use for commercial purpose without permission; otherwise it will be on your own account.

Hereunder are the compiling members of *Graduation Design Handbooks for Coal Mining Engineering Majors*:

Total Editor-in-chief: Lin Zaikang, Li Xihai

The first fascicule Documents for Graduation Design of Mining Major

Editor-in-chief: Wan Zhijun, Zhao Peirong, Zhang Dongsheng

Members: Lin Zaikang, Du Jiping, Wang Qiang, Wu Yafeng, Zheng Xigui, Cao Jianguo, Deng Jinliang

The second fascicule Main Economic Data of the Development Scheme

Editor-in-chief: Wang Qiang, Cui Zhiyong, Tu Shihao

Members: Lin Zaikang, Shi Chunhui, Wang Ping

The third fascicule Mining Design CAD Software And Its Applications

Editor-in-chief: Lin Zaikang, Niu Guiming, Gong Liangwei

Members: Wang Qiang, Tu Jianshan, Wu Yafeng, Pan Zhiyong, Han Fushun, Li Guocai, Hu Haojun

The fourth fascicule Shaft Cross-Section Map

Editor-in-chief: Zheng Xigui, Zheng Youshan

Members: Lin Zaikang, Xin Xiaodong, Wang Xinxiang, Su Gaofeng

The fifth fascicule Pit-Bottom Map

Editor-in-chief: Zheng Xigui, Wu Xiuping, Tu Jianshan

Members: Lin Zaikang, Zhou Yongcheng, Wang Zuo, Pan Dawei, Wang Jun

The sixth fascicule Laneway Cross-Section Map

Editor-in-chief: Lin Zaikang, Guo Chenghao, Xin Xiaodong

Members: Wu Yafeng, Tu Shihao, Zheng Xigui, Zhang Xiaoming, Lu Mingyue, Han Fushun, Wang Chengzhi, Wang Linlin

The seventh fascicule Three-Machine Equipped Map

Editor-in-chief: Zeng Yongwei, Duan Zhenrong, Lin Zaikang

Members: Zheng Xigui, Zhang Dongsheng, Wang Jianjun, Wang Guangkuo

The eighth fascicule Fan Equipment Faculty Curve Map

Editor-in-chief: Zheng Xigui, Wang Zhitai, Xin Xiaodong

Members: Zhao Yiming, Lin Zaikang, Yang Shenqiang, Yao Qiangling, Wu Yafeng, Wang Haiyan, Zhao Shufen

English Translator: Lin Yan, Dong Yongyi

During the compiling of this book, Shan Xi Provincial Institute of Coal Planning & Design gives great support and an all—round proofreading of maps and characters, and offers valuable suggestions. Coal Industry Xi'an Institute of Design & Research, China National Coal Engineering Group Beijing Huayu Engineering Corporation, China National Coal Engineering Group Wuhan Institute of Design & Research, Jiangsu First Industrial Design Institute, Shan Xi Jincheng Coal Industry Group, Inner Mongolia Shenhua Group Shendong Coal—mine, Bulianta Coal-mine, Shigetai Coal—mine, Wanli Coal Corporation of Shenhua Group, Xinji Coal Group, Wanbei Coal & Electricity Group, Xuzhou Coal—mine Group Corp., Pingcheng Group First Coal-mine, Zhengzhou Coal-mine Machinery Corp., Ltd, Shuangxin Coke Mine of 71 corps, Nong 4 Division, Xinjiang Production and Construction Corps, Shan Xi Yuncheng City Anyun Fan Ventilation Corp., Urumchi Ruiante Auto-

mation Equipment Corp. ,Ltd offer abundant materials for this handbook. Hereby, we give sincere thanks to all the above-mentioned groups and their staff.

Thanks also go to some teachers, post-graduate students, and students from grade 1999,2000,2003 and 2004 in the Mining Department.

In view of our limitations, defects and mistakes are unavoidable, all the corrections are welcome.

The editor
December, 2007.

前　言

《采矿专业毕业设计文件》为《采矿工程专业毕业设计手册》(共八分册)的第一分册。

采矿工程毕业设计是对采矿工程专业学生所学知识的综合运用的检阅,是本专业学生最重要的教学实践环节。中国矿业大学采矿工程专业历来高度重视学生毕业设计工作,对毕业实习、毕业设计直至毕业答辩的全过程都制定了详尽文件并认真执行,从而形成了具有采矿工程专业特色的毕业设计体系。长期以来,这些文件处于分散状态。目前国内尚没有一部综合采矿工程专业全部毕业设计文件的教学参考书籍。本分册以中国矿业大学采矿工程专业多年来的教学实践为基础,将毕业设计全过程的有关文件及近年来的优秀毕业设计实例选编成册,使之成为采矿工程专业学生进行毕业设计的重要参考书。

本分册包括5篇。

第一篇毕业实习和毕业设计文件,包括:A. 采矿工程专业毕业实习大纲;B. 采矿工程专业毕业设计大纲;C. 毕业设计一般部分大纲内容;D. 毕业设计专题部分要求;E. 毕业设计文字图纸部分要求;F. 毕业设计格式;G. 采矿工程专业毕业设计答辩和成绩评定。

第二篇优秀毕业设计实例,包括:一般部分——寺河煤矿3 Mt/a新井设计;专题部分——柱状图绘制软件。

第三篇优秀毕业设计专题实例——新庄煤矿$二_2$煤层上行开采研究。

第四篇煤炭科技名词,包括煤炭科技名词审定委员会1997年审定的10类煤炭名词。

参加本分册编写的人员有:

主编:万志军、赵培荣、张东升

成员:林在康、杜计平、王强、武亚峰、郑西贵、曹建国、邓金亮

由于我们水平有限,缺点和错误难免,欢迎批评指正。

编　者

2007年12月

Preface

Documents for graduation design of mining major is the first fascicule of Graduation Design Handbooks for Coal Mining Engineering Majors (eight in all).

Graduation design is a review of what has been learned, and a very important stage for teaching practice. Coal Engineering major of China University of Mining & Technology attaches great importance to graduation design, sets down detailed documents for graduation practice, design and thesis defense and has a serious implementation, thus forming a typical system of graduation design for Coal Engineering majors.

The materials available are relatively spreading around ever since. There is until now no comprehensive teaching reference for the graduation design of coal engineering major. On the basis of several years' teaching practice in China University of Mining & Technology, this fascicule compiles documents regarding the whole process of graduation design and recent excellent examples of graduation design, making it a very important reference handbook for Coal Engineering Majors.

It consists of 5 chapters. The first chapter deals with graduation practice and some relevant documents, including: A. graduation practice syllabus; B. graduation design syllabus; C. general section syllabus; D. specific section requirements; E. characters and map requirements; F. the format; G. thesis defense and grading.

The second chapter is mainly about excellent graduation design examples, including general section……Shihe Coal-mine 3Mt/a New Underground mine design; specific section ……pillar-like drawing software.

The third chapter introduces excellent graduation design example…… Xin Zhuang Coal-mine, study of ascending extraction.

The fourth chapter is the mining Science Vocabulary. It includes the ten parts, that is approbated by Review and Approval Committee.

The fifth chapter is *Norms for the Design of Underground Coal Mine*, includes the seven parts and the appendix A, B, C of it, and an annex about reserves.

Members include:

Editor-in-chief: Wan Zhijun, Zhao Peirong, Zhang Dongsheng

Members: Lin Zaikang, Du Jiping, Wang Qiang, Wu Yafeng, Zheng Xigui, Cao Jianguo, Deng Jinliang

In view of our limitations, defects and mistakes are unavoidable, all the corrections are welcome.

The editor
December, 2007.

目　录

第一篇　毕业实习文件

第二篇　优秀毕业设计实例

第三篇　优秀毕业设计专题实例

第四篇　煤炭科技名词

第五篇　煤炭工业矿井设计规范

第一篇　毕业实习文件