南方科技大学 SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	**课程名称 Course Title**	大数据与集群项目管理 Big Data and Cluster Project Management
2.	**授课院系 Originating Department**	信息系统与管理工程系 Department of Information Systems and Management Engineering
3.	**课程编号 Course Code**	MIS 403
4.	**课程学分 Credit Value**	3
5.	**课程类别 Course Type**	专业选修课 Major Elective Course
6.	**授课学期 Semester**	春 Spring
7.	**授课语言 Teaching Language**	中英双语 English & Chinese
8.	**授课教师、所属学系、联系方式（如属团队授课，请列明其他授课教师） Instructor(s), Affiliation& Contact (For team teaching, please list all instructors)**	王宇 - 信息系统与管理工程系 Rowan Wang - Department of Information Systems and Management Engineering wangy2021@sustech.edu.cn
9.	**实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact**	待确定 To be announced
10.	**选课人数限额(可不填) Maximum Enrolment（Optional）**	

11.	**授课方式 Delivery Method**	**讲授 Lectures**	**习题/辅导/讨论 Tutorials**	**实验/实习 Lab/Practical**	**其它 Other**	**总学时 Total**
	学时数 Credit Hours	48				48

12.	**先修课程、其它学习要求 Pre-requisites or Other Academic Requirements**	无 None

13.	**后续课程、其它学习规划 Courses for which this course is a pre-requisite**	无 None
14.	**其它要求修读本课程的学系 Cross-listing Dept.**	无 None

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

本课程主要开设目的是培养大数据及商务分析相关专业学生发现问题、创新思维、建立课题、管理项目、转化成果、把握（比赛、实习、就业、升学等）机遇的能力。大学生在关键的时期需要强化自己的知识整合能力，让自己能统筹应用所学知识，开展科研、实践、创新、创业等有关项目，并具备一定的项目拓展、成果转化能力。最终用自己的专业知识背景和项目开展经验为自己增添价值，从而在即将面临的激烈升学、就业竞争中获得优势，做出好的职业发展选择，把握住机会。

The main aim of this course is to help students of big data and business analytics (BDBA) related majors develop skills in discovering problems, creating innovations, proposing and managing projects, and developing career goals. It is very important for college students to enhance the ability of assembling all their knowledge to conduct research, practice, innovation, or entrepreneur projects. Eventually, they must build up excellent profiles with course learning and project experiences, in order to succeed in the intensive competitions of graduate school application or job seeking.

16. 预达学习成果 Learning Outcomes

(1) 了解大数据及商务分析领域科研、实践创新等有关项目的开展方法。
(2) 清楚高校、研究机构、以及企业对及大数据及商务分析有关专业学生的能力期望。
(3) 创建自己的项目课题。
(4) 对自己做出清楚的职业规划。

(1) To understand how to find BDBA related problems, create projects, and conduct studies.
(2) To be clear about graduate schools and companies' expectations on undergraduate students of BDBA majors.
(3) To create meaningful research; practice; innovation; or entrepreneur projects.
(4) To develop career goals and plans.

17. 课程内容及教学日历 （如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）
Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

理论（48 学时）

第1周（项目展示 – 教授分享）

教授分享带领大数据及商务分析相关领域学生开展创新科研项目，并取得优良成果的案例。分享案例皆是有关对新颖管理问题的数学建模。其中一个主要案例为“网约车自调度系统”的创新与设计。内容涉及到在新兴数字化、信息化、智能化环境下，传统行业的创新思维；如何用数学仿真的方法展示创新商业模式；对于创新商业模式该进行哪些方面的数据采集和分析等。案例中会重点讨论对用户行为和决策选择类数据的采集方法，以及如何利用有限数据，在仿真工具的配合下开展研究。

第2周（项目展示 – 教授分享）

教授分享带领大数据及商务分析相关领域学生开展社会调研项目，并取得优良成果的案例。分享案例皆是有关对重要社会问题的数据分析。其中一个主要案例为“中国通信大数据行程卡机制”的数据分析与效用判定。讲授内容包括如何从日常生活中找到有意义的问题；如何对问题细化，提出可以用量化方法来解决问题的方案；解决问题需要如何做数据支撑（在数据量、丰富性，与可获取性、易分析性间平衡取舍）；如何用最简单明了的方法展示数据支撑结论等。案例分享中还会重点讨论“善用数据，不过度解释数据”等大数据有关科技道德伦理问题。

第3周（项目启动 – 学生汇报）

学生分享自己的项目设想。说明为何选择此项目，大数据及商务分析所学知识如何支撑此项目，目前已有的项目进展，以及今后打算和目标等。本课程的课程项目设计目的在于，能让同学们运用各类大数据及商务分析所学的知识，以及其他学科有关知识技能储备，提出创新性的思路，为实际生活中重要问题提出解决方案，或创造全新商业模式。课程项目的选题需要与大数据及商务分析紧密相关；项目开展计划需要有较高的技术含量（包括有效可行的数据采集方式、多元的数据分析方法、专业的优化建模流程等）。对于选题适合的项目，**教授**会提出总体框架上的建议，并对最低程度的所需数据做出要求。对于选题不合适的项目，**教授**会给予指出，并尽可能帮助同学转换思路，建议更有意义、更具实施可能性的项目来开展。

第4周（项目完善 – 学生汇报）

学生根据前一单元中教授对项目设想提出的建议和指导，完善项目的总体规划。教授与学生讨论项目规划的实施可能性与时间规划。教授会根据实际情况重点讨论完成项目所需要的数据支持、知识基础、工作量，以及项目的可见前景。

第5周（项目合作 – 教授分享）

教授会讲解如何根据项目特点寻找业界合作方；如何从业界利益的角度出发表述项目的意义与团队优势；如何有效地与合作方商谈数据获取以及实验开展计划等。此单元中会着重讨论与业界合作项目中的数据脱敏、保密协议等重要问题。

第6周（项目合作 – 嘉宾参与）

教授根据最终确定的学生项目，邀请有关行业业界嘉宾一起对接讨论，商讨项目的推进方式，尤其是数据的获得方法以及实践前景，并对学生项目的具体规划进行指导。在给学生们对接资源以及讲解分析项目优劣势的时候，教授与嘉宾也会分析经典商业案例或者自身以往项目经验，以及大数据商务分析在各行业领域的应用实例和前景。讨论话题还将包括公司企业在开展大数据商务分析类项目时的痛点和难点。

第7周（双创比赛 – 教授分享）

这一单元的课堂会讨论如何用学生项目参加大学生创新创业类比赛。教授会和学生一起探讨学生利用课程项目参加创新

创业类比赛的可能性。教授分享以往带学生参赛以及自己作为评委的经验。教授讲解作为商学院软科技类参赛项目，如何让大数据分析、数学建模等硬核内容作为项目亮点和加分项。对于有参赛兴趣的学生，教授会和学生一起按照几大重要双创比赛的时间线制定计划。

第8周（项目拓展 – 教授分享）

这一单元的课堂会讨论如何将学生的课堂项目进行延申及拓展，从而能对学生的升学和就业带来帮助。对于同一个项目，参与双创比赛时的侧重点应当是在突出介绍项目设想的创新性、新颖度等。而在升学和就业申请材料里则应该突出项目中的科学问题，如果整合各门课程所学知识分析和解决问题。教授会分享以往课程中较为成功的项目案例，例如“即时急救应答数据平台”、“远程即时答疑系统”等，讲解如何在升学以及工作申请中，利用课程项目展现学生数据分析与数学建模的能力与经验。

第9周（境内升学 – 嘉宾参与）

教授邀请（线上线下结合）境内一流商学院（包括清华、北大、复旦、上海交大、上海财经大学、香港中文大学深圳等）大数据与商务分析有关专业教授一起讨论学术导师对学生的期望和选择学生的条件。讨论的一大重点在于优秀高校大数据与商务分析有关专业对本科生课程学习、知识储备、研究构思、职业规划等方面的要求和偏好。教授与嘉宾也会探讨本科生如何通过完成科研及实践项目来增加自己的升学砝码。教授还将邀请国内在读研究生分享自己本科时期科研项目经历和升学申请经验。

第10周（境外留学 – 嘉宾参与）

教授邀请（线上线下结合）境外一流商学院（包括香港、新加坡、北美、欧洲等地HKSUT、SMU、UCLA、LBS等）大数据与商务分析有关专业教授一起讨论学术导师对学生的期望和选择学生的条件。讨论话题包括：优秀高校大数据与商务分析有关专业硕士博士项目如何选择学生；境内高校本科生在升学申请中的优劣势；科研与实践项目对海外留学申请的重要性；如何将课程项目融入到申请材料中等。教授与嘉宾还将讨论大数据与商务分析的前沿学术发展和研究机会。

第11周（数据智能咨询公司 – 嘉宾参与）

教授邀请（线上线下结合）数据智能咨询类公司嘉宾（包括杉树科技、拓数派科技等的创始人或高管团队）一起分享行业里大数据与商务分析领域的最新发展与应用；讲解大数据及商务分析相关专业学生在就业市场的优劣势；有关行业对大数据及商务分析专业本科毕业生从事工作的期望和本科毕业生能力的综合考察考量方法；以及学生将如何突出在数据分析、数学建模等专业性技术上的优势。教授还将邀请近期毕业生分享自己本科时期创新实践项目经历和求职经验。教授也会邀请领域相关的课程项目的学生做简单汇报，并请嘉宾给出指导建议。

第12周（高新科技创业公司 – 嘉宾参与）

教授邀请（线上线下结合）高新科技创业公司嘉宾（包括一清创新、瑞德林生物技术等的创始人或高管团队）一起分享行业里大数据与商务分析领域的最新发展与应用；讲解大数据及商务分析相关专业学生在就业市场的优劣势；有关行业对大数据及商务分析专业本科毕业生从事工作的期望和本科毕业生能力的综合考察考量方法；以及学生将如何突出在数据分析、数学建模等专业性技术上的优势。教授还将邀请近期毕业生分享自己本科时期创新实践项目经历和求职经验。教授也会邀请领域相关的课程项目的学生做简单汇报，并请嘉宾给出指导建议。

第13周（传统实业龙头企业 – 嘉宾参与）

教授邀请（线上线下结合）传统实业龙头企业嘉宾（包括世邦魏理仕、九元航空等的创始人或高管团队）一起分享行业里大数据与商务分析领域的最新发展与应用；讲解大数据及商务分析相关专业学生在就业市场的优劣势；有关行业对大数据及商务分析专业本科毕业生从事工作的期望和本科毕业生能力的综合考察考量方法；以及学生将如何突出在数据分析、数学建模等专业性技术上的优势。教授还将邀请近期毕业生分享自己本科时期创新实践项目经历和求职经验。教授也会邀请领域相关的课程项目的学生做简单汇报，并请嘉宾给出指导建议。

第14周（金融投资服务企业 – 嘉宾参与）

教授邀请（线上线下结合）金融投资服务企业嘉宾（包括国信证券、恒生银行等的创始人或高管团队）一起分享行业里大数据与商务分析领域的最新发展与应用；讲解大数据及商务分析相关专业学生在就业市场的优劣势；有关行业对大数据及商务分析专业本科毕业生从事工作的期望和本科毕业生能力的综合考察考量方法；以及学生将如何突出在数据分析、数学建模等专业性技术上的优势。教授还将邀请近期毕业生分享自己本科时期创新实践项目经历和求职经验。教授也会邀请领域相关的课程项目的学生做简单汇报，并请嘉宾给出指导建议。

第15周（职业规划 – 学生汇报）

学生分享自己的职业规划，教授给与参考意见和疑问解答。这个单元里，教授会结合大数据与商务分析领域的现状与发展方向，给学生的升学、就业、创业规划做指导。同时，教授也会讲解和分析不同类型的企业的实习经历的作用和影响，以及不同科研项目参与经历的亮点与帮助。通过这一阶段讨论，希望学生能对大数据与商务分析的科研与行业领域有更充分的了解，也为自己做出更合理的规划。

第16周（项目总结 – 学生汇报）

学生进行项目总结汇报，教授邀请嘉宾参与点评和指导。报告中，学生需要对项目中所包含的数据分析、数学建模等内容做详细阐述。教授与嘉宾将针对项目做点评与帮助。

Lecture (48 Hours)

Week 1 (Project Showcase - Professor Sharing)
The professor shares examples on BDBA undergraduate research innovation projects. The examples are related to mathematical modeling on emerging management problems. One main project is on the invention and design of ``On-Demand Ride-Sharing Self-Dispatching System.'' The contents include innovative thinking for traditional industries under the new digital economy; application of mathematical modeling and simulation tools in business model innovations; data collection and analysis methods for business analytics, etc.

Week 2 (Project Showcase - Professor Sharing)
The professor shares examples on BDBA undergraduate social practice projects. The examples are related to data analysis on important social issues. One main project is on the analysis and evaluation of ``Chinese Anti-pandemic Traveling Record Card System.'' The contents include how to discover interesting problems in daily life; how to design quantitative methods to analyze problems; how to optimally find data support for solving problems; how to show data and results in simple yet meaningful ways.

Week 3 (Project Initialization - Student Presentation)
Students present their project topics and ideas. The presentation must cover the motivation of choosing the project, how knowledge and skills learnt from BDBA courses can contribute to the project, the plan and schedule of the project, etc. The project topic must be closely related to BDBA, and technical contents (including effective data collection plans,

multiple data analysis methods, and meaningful mathematical models) are expected. The professor comments on the suitability of the project choices and suggests alternative thinking or ideas when necessary.

Week 4 (Project Initialization - Student Presentation)
Based on the comments and suggestions received from the professor, students edit their project topics and plans. Students present and discuss with the professor on the feasibility and timeline of the updated project plans. The professor gives detailed suggestions on data collection plans, reading materials, etc.

Week 5 (Industry Collaboration - Professor Sharing)
The professor shares experiences on how to build industry collaboration for research projects. These include how to present the motivation and potential impact of the project from practical perspective; how to demonstrate the advantage of the student group; how to conduct effective negotiations for data accessibility; how to design industry joint experiments; etc.

Week 6 (Industry Collaboration - Guest Participation)
Based on the finalized project topics, the professor invites guests from practices to discuss with students on the project plans. Guests give detailed comments and guidance on important aspects, for example accessibility of data; feasibility of experiments; possibility of implementation; etc. The professor and guests also share past experiences on university-industry project collaboration. Guests also discuss the importance and development of BDBA related contents in their companies.

Week 7 (Innovation & Entrepreneurship Competition - Professor Sharing)
During this class, the professor and students discuss about the possibility of participating in various innovation & entrepreneurship competitions using the course projects. The professor shares experiences on coaching student teams for competitions as well as serving as competition judges. The professor comments on the advantage and disadvantage of business students and BDBA-related projects in the competitions. The professor discusses with students who are interested in the competition opportunities on the requirements and timeline to enter the competitions.

Week 8 (Project Extension - Professor Sharing)
During this class, the professor and students discuss about how the course projects can be used to help students in their graduate school application or job seeking. For example, while writing statements for graduate school application, students need to emphasize the scientific issues and technical challenges associated with the projects. It is also important to summarize how the knowledge and skills learnt from different courses can contribute comprehensively to the problem-solving tasks in the projects.

Week 9 (Graduate Study in Mainland China - Guest Participation)
The professor invites faculty members from top business schools in mainland China to have a panel discussion on BDBA related graduate study opportunities. Guests comment on their expectations on good undergraduate students in the aspects of, for example, course study, understanding of scientific research, and career goal. Guests talk about how students can successfully use research project experiences and achievements in self-promotion. The professor also invites current graduate students to share their graduate school application experiences.

Week 10 (Graduate Study Overseas - Guest Participation)
The professor invites faculty members from top business schools in the US, Europe, Singapore, Hong Kong, etc, to have a panel discussion on BDBA related graduate study opportunities. Guests comment on the advantages and disadvantages of students from mainland China in oversea graduate school application and share views on how BDBA students should show their strong technical abilities. Guests also discuss BDBA-related research environment and directions in oversea top universities.

Week 11 (Data Intelligence Consulting Industry - Guest Participation)
The professor invites guests from data intelligence consulting companies to share related industry developments and important practical issues. Discussion contents include the advantage of BDBA-related-major students in the job markets; how companies assess the ability of BDBA-major graduates; and how should BDBA students emphasize their skill set in data analytics and mathematical modeling. The professor also invites recent graduates to share their job market experiences.

Week 12 (High-Tech Industry - Guest Participation)
The professor invites guests from high-tech enterprises to share related industry developments and important practical issues. Discussion contents include the advantage of BDBA-related-major students in the job markets; how companies assess the ability of BDBA-major graduates; and how should BDBA students emphasize their skill set in data analytics and mathematical modeling. The professor also invites recent graduates to share their job market experiences.

Week 13 (Traditional Industry - Guest Participation)
The professor invites guests from leading entities in traditional industries to share related industry developments and important practical issues. Discussion contents include the advantage of BDBA-related-major students in the job markets; how companies assess the ability of BDBA-major graduates; and how should BDBA students emphasize their skill set in data analytics and mathematical modeling. The professor also invites recent graduates to share their job market experiences.

Week 14 (Financial Industry - Guest Participation)
The professor invites guests from financial industry to share related industry developments and important practical issues. Discussion contents include the advantage of BDBA-related-major students in the job markets; how companies assess the ability of BDBA-major graduates; and how should BDBA students emphasize their skill set in data analytics and mathematical modeling. The professor also invites recent graduates to share their job market experiences.

Week 15 (Career Plan - Student Presentation)
Students present their graduation / career plans. The professor gives advises and suggestions. The professor shares the view on the current developments and future opportunities of BDBA and explains how the course project can make long-run impact on students' career.

Week 16 (Project Completion - Student Presentation)
Students give project final presentation. The professor invites guests to give comments together.

18. 教材及其它参考资料 Textbook and Supplementary Readings

授课老师准备的材料。
Materials prepared by the instructor.

课程评估 ASSESSMENT

19.

评估形式 Assessment	评估时间 Time	占考试总成绩百分比 Grade Percentage	违纪处罚 Penalty	备注 Notes
课堂表现 Participation		20		
项目提议 Project Proposal		20		项目选题汇报
项目进展 Project Progress		20		项目进展汇报
项目报告 Final Presentation		40		项目总结汇报

20. 记分方式 GRADING SYSTEM

☑ A. 十三级等级制 **Letter Grading**
☐ B. 二级记分制（通过/不通过） **Pass/Fail Grading**

南方科技大学
SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

课程审批 REVIEW AND APPROVAL

21. **本课程设置已经过以下责任人/委员会审议通过**
This Course has been approved by the following person or committee of authority
