**上海交通大学研究生专业课程信息收集表**

**Information Form for SJTU Graduate Profession Courses**

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| **课程基本信息Basic Information** | | | | | | | |
| \*课程名称  Course Name | （中文Chinese）并行理论 | | | | | | |
| （英文English）Concurrency Theory | | | | | | |
| \*学分  Credits | 3 | | | \*学时  Teaching Hours | 48 | | |
| \*开课学期  Semester | 秋季学期 Fall | | | \*是否跨学期  Cross-semester? | 否 No | | 跨Spanning over 个学期Semesters（含夏季学期）。 |
| \*课程类型  Course Type | 专业基础课 Program Core Course | | | \*课程分类  Course Type | 全日制课程 For full-time students | | |
| \*课程性质  Course Category | 专业课 Specialized Course | | | 课程层次  Targeting Students | 硕博共用 All graduates | | |
| \*授课语言  Instruction Language | 中文 Chinese | | | 主要授课方式  Teaching Method | 课堂教学 In class teaching | | |
| \*成绩类型  Grade | 等第制 Letter grading | | | 主要考核方式  Exam Method | 口试 Oral exam | | |
| \*开课院系  School | 电子信息与电气工程学院计算机科学与工程系 | | | | | | |
| 所属学科  Subject |  | | | | | | |
| 负责教师  Person in charge | 姓名Name | 工号ID | 单位School | | | 联系方式E-mail | |
| 董笑菊 | 9477 | 电院计算机系 | | | xjdong@sjtu.edu.cn | |
| **课程扩展信息Extended Information** | | | | | | | |
| \*课程简介  (中文)  Course Description | （分段概述课程定位、教学目标、主要教学内容、先修课程等；不少于200字。）  本课程主要讲解**并发计算模型**，包括**进程演算和Petri网**等。这些模型用来描述和分析并发计算系统。通过本课程的学习，可以掌握并发计算领域的背景知识和其理论研究发展状况。同时学生可以熟识最基本的并发计算模型的基本概念，以及与这些模型相关的研究方法、证明技巧和各种应用场景。本课程涵盖的模型主要是**CCS，Pi演算和Petri网**等。基本概念包括：**语法、标号转移语义、强/弱互摸拟、公理化系统**；研究方法：**代数方法、集合论**等；应用场景：**通讯系统、程序语言**等。并发计算模型是一个活跃的领域，新成果不断研究发表，学生可以通过阅读论文来跟踪最新研 究动态，本课程会安排学生在课堂上交流，以提高对本课程的理解，并拓展知识面。 | | | | | | |
| \*课程简介  （English）  Course Description | （须与中文一致，翻译请力求信达雅。）  This course intends to provide students a sufficient background Knowledge and development of theoretical research in the concurrent computation field. This course mainly talks about process calculi and Petri nets, which are the notable models of concurrent system.  By taking this course, students can be familiar with CCS, Pi calculus and Petri nets, the most basic models, and the research approaches, proof techniques and applications associated with these models.  The models covered in this course are mainly CCS, Pi calculus and Petri net. Basic concepts include: grammar, labeling transition system, strong/weak bisimulation, axiomatic system; research methods: algebraic methods, set theory, etc.; application scenarios: communication systems, programming languages, etc. Concurrent computing models are an active field. New results are continuously researched and published. Students can follow the latest research trends by reading papers. This course will arrange students to communicate in the classroom to improve understanding of this course and expand knowledge. | | | | | | |
| \*教学大纲  (中文)  Syllabus | （建议列表形式，各列内容：章节、主要内容、课时数、教学方式等）   |  |  |  |  | | --- | --- | --- | --- | | 章节 | 主要内容 | 课时数 | 教学方式 | | 1 | Introduction | 3 | 课堂教学 | | 2 | Pure CCS | 6 | 课堂教学 | | 3 | Value-passing CCS | 3 | 课堂教学 | | 4 | Observational Equivalence - Strong bisimulation | 9 | 课堂教学 | | 5 | Observational Equivalence - Weak bisimulation | 6 | 课堂教学 | | 6 | Axioms for Processes | 6 | 课堂教学 | | 7 | Modeling Programming Language | 3 | 课堂教学 | | 8 | Pi Calculus | 3 | 课堂教学 | | 9 | Petri Nets | 6 | 课堂教学 | |  | Review | 3 | 课堂教学 | | | | | | | |
| \*教学大纲  （English）  Syllabus | （须与中文一致，翻译请力求信达雅。）   |  |  |  |  | | --- | --- | --- | --- | | Chapter | Content | Hours | Format | | 1 | Introduction | 3 | 课堂教学 | | 2 | Pure CCS | 6 | 课堂教学 | | 3 | Value-passing CCS | 3 | 课堂教学 | | 4 | Observational Equivalence - Strong bisimulation | 9 | 课堂教学 | | 5 | Observational Equivalence - Weak bisimulation | 6 | 课堂教学 | | 6 | Axioms for Processes | 6 | 课堂教学 | | 7 | Modeling Programming Language | 3 | 课堂教学 | | 8 | Pi Calculus | 3 | 课堂教学 | | 9 | Petri Nets | 6 | 课堂教学 | |  | Review | 3 | 课堂教学 | | | | | | | |
| \*课程要求  （中文）  Requirements | （课程考核方式、考核标准等；不少于50字）  本课程属于理论计算机科学，内容环环相扣。重视过程考核，要求按时提交作业，确保每个阶段知识掌握到位。  成绩组成主要包括：出勤和作业，占总成绩60%；论文宣讲，占总成绩40%。 | | | | | | |
| \*课程要求  （English）  Requirements | （须与中文一致，翻译请力求信达雅。）  This course is theoretical computer science and the content is linked. Pay attention to the process assessment, require the timely submission of the assignment, to ensure that each stage of knowledge in place.  Evaluation: attendance and homework, accounting for 60% of the total score; presentation, accounting for 40% of the total score. | | | | | | |
| \*课程资源  （中文）  Resources | （教材、教参、网站资料等。）  1. Communication and Concurrency. Robin Milner. Prentice Hall, 1989.  2. Communicating and Mobile Systems: The π-calculus. Robin Milner. Cambridge University Press, 1999.  3. The π-calculus: A Theory of Mobile Processes. Davide Sangiorgi. Cambridge University Press, 2001.  4. Petri nets – an introduction, Wolfgang Reisig, Springer-Verlag, 1982. | | | | | | |
| \*课程资源  （English）  Resources | （须与中文一致，请力求信达雅。）  1. Communication and Concurrency. Robin Milner. Prentice Hall, 1989.  2. Communicating and Mobile Systems: The π-calculus. Robin Milner. Cambridge University Press, 1999.  3. The π-calculus: A Theory of Mobile Processes. Davide Sangiorgi. Cambridge University Press, 2001.  4. Petri nets – an introduction, Wolfgang Reisig, Springer-Verlag, 1982. | | | | | | |
| 备注  Note |  | | | | | | |
| 课程负责人签字Signature: 董笑菊 日期：2020.7.15 | | | | | | | |
| **论证审核信息** | | | | | | | |
| **学院（系）意见**  经审核，确认该课程信息完整、规范，中英文信息一致。  分管领导（签字）： （院系盖章） 年 月 日 | | | | | | | |

**说明**：

1）课程信息中标\*内容为必填项，请如实、准确填写；

2）本表只须一份，由任课教师填写后提交院系教务人员；

3）经院系主管院长审核确认后，请院系教务老师将课程信息录入新信息系统（http://yjs.sjtu.edu.cn），提交研究生院审核；审核通过后，将院系签字盖章的表格送交研究生院培养办存档。