The syllabus of Differentiable Manifolds

<table>
<tr><td colspan="6">课程基本信息（Course Information）</td></tr>
<tr><td>课程代码
（Course Code）</td><td>MA4133
/MA401</td><td>学时
（Credit Hours）</td><td>48</td><td>学分
（Credits）</td><td>3</td></tr>
<tr><td rowspan="2">课程名称
（Course Name）</td><td colspan="5">微分流形</td></tr>
<tr><td colspan="5">Differentiable Manifolds</td></tr>
<tr><td>课程属性
(Course Type)</td><td colspan="5">专业选修课</td></tr>
<tr><td>开课院系
（School）</td><td colspan="2">Department of Mathematics</td><td>开课学期
（Term）</td><td colspan="2">Fall</td></tr>
<tr><td>先修课程
（Prerequisite course）</td><td colspan="5">Mathematical Analysis, Linear Algebra, Point-Set Topology</td></tr>
<tr><td>授课教师
（Instructors）</td><td colspan="5">Feng Rong</td></tr>
<tr><td>课程简介（Description）
300-500 字</td><td colspan="5">Although the concept of “manifold” comes from geometry, it is used in many other areas of mathematics, such as dynamical systems, harmonic analysis, and differential topology. This course is an elementary introduction to the theory of differentiable manifolds. Topics to be covered include (but not limited to): topological manifolds, definition and examples of differentiable manifolds, submanifolds, vector fields on manifolds, basics of Lie groups and Lie algebra, tensor fields and exterior differentiation, basics of differential forms, integration on manifolds, manifolds with boundary and Stokes’s theorem.</td></tr>
<tr><td colspan="6">课程教学大纲（course syllabus）</td></tr>
<tr><td>*学习目标(Learning Outcomes)</td><td colspan="5">Students are expected to gain the basic knowledge of the fundamental theory of differentiable manifolds.</td></tr>
<tr><td>*教学内容、进度安排及要求
(Class Schedule
& Requirements)</td><td colspan="5">
<table>
<tr><th>教学内容
topics</th><th>学时
Credit hours</th><th>教学方式
Teaching methodology</th><th>作业及要求
tasks</th><th>基本要求
Intended learning outcomes</th><th>考查方式
Assessment methods</th></tr>
<tr><td>Introduction, I.1-I.3</td><td>3</td><td>lecture</td><td></td><td></td><td>homework</td></tr>
<tr><td>I.4-I.5</td><td>3</td><td>lecture</td><td></td><td></td><td>homework</td></tr>
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	Chapter II (only brief review of calculus)	3	lecture			homework
	III.1-III.2	3	lecture			homework
	III.3-III.7	3	lecture			homework
	III.8-III.9	3	lecture			homework
	IV.1-IV.4	3	lecture			homework
	IV.5-IV.6	3	lecture			homework
	IV.7-IV.9	3	lecture			homework
	V.1-V.2	3	lecture			homework
	V.3-V.6	3	lecture			homework
	V.7-V.8	3	lecture			homework
	VI.1-VI.4	3	lecture			homework
	VI.5	3	lecture			homework
	VI.6-VI.9	3	lecture			homework
	Wrap up, final review	3	lecture			homework/final
考核方式 (Assessment methods and Grading)	The *final grade* is decided as follows: 30% - Homework, 70% - Final					
教材或参考资料 (Textbooks & Other Reading Materials)	Textbook: "***An Introduction to Differentiable Manifolds and Riemannian Geometry***", by William M. Boothby References: "***An Introduction to Manifolds***", by Loring W. Tu, "***Topology from the Differentiable Viewpoint***", by John Milnor					
备注 （Notes）						