

# Report on the Graduate Program of the UW Mathematics Department

*Annual Report*  
*Graduate Program Committee*  
*Steffen Lempp, chair*  
*May 2002*

This annual report summarizes the Graduate Program Committee's work during the academic year 2001/02. It consists of:

1. a survey of jobs obtained by our graduate students: This short survey summarizes job offers to, and jobs accepted by, our students graduating this calendar year with a doctoral degree;
2. enrollment figures for UW math graduate courses (numbered 700 and above) during the academic years 1997/98 through 2001/02; and
3. a brief report on the changes for the joint master's degree in mathematics and education.

## 1. Survey of jobs obtained

The following table gives a quick survey as to how the math Ph.D. students graduating in 2002 did in their job hunt. Overall, this has been an extremely successful year for our students, with six of the ten graduating students obtaining distinguished postdoctoral appointments.

position	number	locations
tenure track	2	Shippensburg U of Pa. / St. Olaf
academic postdoc	6	Princeton / Max Planck / Umich / USC / Urbana / J. Hopkins
academic temp	0	
industrial	0	
none as of May 1	2	
not applied yet	0	
unknown	0	
<b>total</b>	10	

## 2. Enrollments figures of UW math graduate courses

The tables on the following two pages show the enrollments of all UW math graduate courses (numbered 700 or above) for the semesters fall 1997 through spring 2002. Courses in italics were listed in the Graduate School Catalog but did not run during these five years.

No.	FIELD or Course Title ( <i>italic if 0 students</i> )	S02	F01	S01	F00	S00	F99	S99	F98	S98	F97	Total
	<b>ALGEBRA</b>	<b>51</b>	<b>85</b>	<b>80</b>	<b>70</b>	<b>63</b>	<b>70</b>	<b>60</b>	<b>75</b>	<b>69</b>	<b>70</b>	<b>693</b>
741	Abstract Algebra I		23		32		24		33		28	140
742	Abstract Algebra II	13		26		22		27		16		104
743	Matrix Theory								8			8
744	<i>Algebraic Graph Theory</i>											0
745	Theory of Groups		canc		11	canc			13		5	29
746	Rings and Modules	5		15			7			6		33
803	<i>Experimental Design I</i>											0
811	Algebraic Number Theory			15					7			22
813	<i>Algebraic Algorithms I</i>											0
814	<i>Algebraic Algorithms II</i>											0
841	Advanced Topics in Algebra	canc	16	9		6	13	13	8	14		79
842	<i>Topics in Coding Theory</i>											0
843	Advanced Topics in Rings and Algebras		26	13	7	20	16				12	94
845	Advanced Topics in Field Theory		14							8		22
867	Modular Forms	15										15
869	Advanced Topics in Number Theory				13							13
875	Topics in Combinatorics	13	canc		6 (canc)	11	6	15			16	67
885	<i>Matrix Theory in Numerical Analysis</i>											0
941	Seminar in Algebra	5	6	2	1	4	4	5	5	5	9	46
967	Seminar in Number Theory								1	20		21
	<b>ANALYSIS - GENERAL</b>	<b>49</b>	<b>36</b>	<b>31</b>	<b>33</b>	<b>39</b>	<b>33</b>	<b>22</b>	<b>23</b>	<b>23</b>	<b>26</b>	<b>315</b>
721	A First Course in Real Analysis		31		33		33		23		26	146
722	Complex Analysis	23		21		23		9		14		90
723	<i>Entire Functions</i>											0
725	A Second Course in Real Analysis	21		10		16		13		9		69
809	<i>Math Aspects of Quantum Mechanics</i>											0
921	Seminar in Analysis	5	5									10
	<b>ANALYSIS – EQUATIONS</b>	<b>16</b>	<b>14</b>	<b>5</b>	<b>11</b>	<b>7</b>	<b>12</b>	<b>16</b>	<b>0</b>	<b>6</b>	<b>9</b>	<b>96</b>
716	Ordinary Diff Equations	7		5	canc	canc		9				21
727	Calculus of Variations and Related Topics				11							11
807	<i>Dynamical Systems</i>											0
819	Partial Diff Equations I		14		canc		12				9	35
820	Partial Diff Equations II	9				7		7		6		29
	<b>ANALYSIS – FUNCTIONS</b>	<b>14</b>	<b>30</b>	<b>36</b>	<b>33</b>	<b>17</b>	<b>23</b>	<b>18</b>	<b>38</b>	<b>30</b>	<b>11</b>	<b>250</b>
805	Special Functions							9				9
806	<i>Integral Transforms and their applications</i>											0
821	Advanced Topics in Real Analysis		8						10	11		29
823	Advanced Topics in Complex Analysis		12	9	16	7	11	canc	canc	8		63
825	Functional Analysis I			20					14			34
826	<i>Functional Analysis II</i>											0
827	Fourier Analysis (spring 827 listed as 828)		10		17		12		14		11	64
828	Advanced Topics in Harmonic Analysis	14		7		10		9		11		51
	<b>ANALYSIS – PROBABILITY/STATISTICS</b>	<b>30</b>	<b>48</b>	<b>34</b>	<b>50</b>	<b>24</b>	<b>59</b>	<b>17</b>	<b>41</b>	<b>21</b>	<b>35</b>	<b>359</b>
709	Math Statistics I		16		23		23		16			78
710	Math Statistics II	16		18		14		12		6		66
735	Stochastic Analysis		10				14				17	41
737	Introduction to Stochastic Control											0
831	Theory of Probability I		22		27		22		15		18	104
832	Theory of Probability II	14		11		10		5		8		48
833	Topics in the Theory of Probability		canc	5					10	7		22
	<b>ANALYSIS - TOTAL</b>	<b>109</b>	<b>128</b>	<b>106</b>	<b>127</b>	<b>87</b>	<b>127</b>	<b>73</b>	<b>102</b>	<b>80</b>	<b>81</b>	<b>1020</b>

No.	FIELD or Course Title ( <i>italic if 0 students</i> )	S02	F01	S01	F00	S00	F99	S99	F98	S98	F97	Total
	<b>APPLIED MATH</b>	<b>62</b>	<b>56</b>	<b>73</b>	<b>72</b>	<b>82</b>	<b>102</b>	<b>88</b>	<b>32</b>	<b>72</b>	<b>96</b>	<b>735</b>
701	Math Methods in Physics and Engr I						9		13		12	34
702	<i>Math Methods in Physics and Engr II</i>											0
703	Methods of Appl Math 2		18		8		12		13		11	62
704	Methods in Appl Math 2	9		8		7		12		9		45
705	Math Fluid Dynamics				10		canc			12		22
707	<i>Theory of Elasticity</i>								canc			0
712	Finite Difference Methods	29		19		46		48		30		172
713	Numerical Methods for PDE (see also 883)		canc		canc							0
717	Numerical Functional Analysis I						12					12
718	<i>Numerical Functional Analysis II</i>											0
726	Nonlinear Prog Theory and Applications				22		37				23	82
733	Comp'l Methods for Large Sparse Systems	canc		27		19		11				57
777	Nonlinear Dynamics, Bifurcations & Chaos		16				17				17	50
801	Topics in Applied Math	8	9	9	21	canc	canc	6			15	68
812	Advanced Methods of Applied Math			canc			4	11	6	11	18	50
837	Topics in Numerical Analysis	7										7
881	<i>Numerical Methods for ODE I</i>											0
882	<i>Numerical Methods for ODE II</i>											0
883	Numerical Methods for PDE I (see also 713)						11					11
884	<i>Numerical Methods for PDE II</i>											0
887	Approximation Theory					10		canc		10		20
991	Math of Biol Computation & Bioinformatics	9	13	10	11							43
	<b>LOGIC</b>	<b>41</b>	<b>46</b>	<b>33</b>	<b>31</b>	<b>21</b>	<b>37</b>	<b>21</b>	<b>44</b>	<b>24</b>	<b>31</b>	<b>329</b>
770	Foundations of Mathematics		15		14		13		21		11	74
771	Set Theory	12		11		8		9		6		46
773	Computability Theory		6		7		7		11		5	36
776	Model Theory	7		6		3		3		canc		19
873	Advanced Topics in Foundations	13	14	9	5	4	10	7	8	11	9	90
975	Seminar – The Foundations of Math	9	11	7	5	6	7	2	4	7	6	64
	<b>TOPOLOGY – GEOMETRY</b>	<b>15</b>	<b>22</b>	<b>22</b>	<b>36</b>	<b>13</b>	<b>25</b>	<b>16</b>	<b>13</b>	<b>5</b>	<b>21</b>	<b>188</b>
761	Differentiable Manifolds		12		20		8		6			46
762	Differential Topology	10		9		7		6				32
763	Introduction to Algebraic Geometry I		10		16		11		canc		12	49
764	Introduction to Algebraic Geometry	5		7		6				5		23
765	Differential Geometry										9	9
856	Topics in Differential Topology			6			canc					6
863	Advanced Topics in Algebraic Geometry						6	10	7			23
	<b>TOPOLOGY W/O GEOMETRY</b>	<b>22</b>	<b>27</b>	<b>44</b>	<b>38</b>	<b>16</b>	<b>37</b>	<b>29</b>	<b>36</b>	<b>17</b>	<b>17</b>	<b>283</b>
751	Introductory Topology I		16		30		20		31		9	106
752	Introductory Topology II	13		25		5		21		5		69
753	Algebraic Topology I		canc		canc		11					11
754	Algebraic Topology II			10						6		16
755	<i>General Topology</i>											0
757	<i>Geometric Topology</i>											0
851	Topics in Geometric Topology		6									6
853	<i>Topics in Algebraic Topology</i>											0
951	Seminar in Topology	9	5	9	8	11	6	8	5	6	8	75
	<b>TOPOLOGY AND GEOMETRY</b>	<b>37</b>	<b>49</b>	<b>66</b>	<b>74</b>	<b>29</b>	<b>62</b>	<b>45</b>	<b>49</b>	<b>22</b>	<b>38</b>	<b>471</b>
	<b>OTHER OR UNKNOWN</b>											<b>91</b>
835	<i>Topics in Math Systems Theory</i>											0
850	???									8		8
903	Seminar in Mathematics Education	9	2	2	1	2						16
911	Seminar in College Math Teaching							9				9
990	Reading and Research									31	27	58
	<b>OVERALL TOTAL OF ALL COURSES</b>	<b>704</b>	<b>799</b>	<b>810</b>	<b>842</b>	<b>619</b>	<b>891</b>	<b>641</b>	<b>647</b>	<b>606</b>	<b>680</b>	<b>7239</b>

The above tables obviously indicate a shift of courses taught, mainly due to a shift in faculty interest, faculty retiring and new faculty being hired. The applied math caucus is in the process of systematically restructuring the course offering in this area; other caucuses may wish to proceed likewise, keeping in mind the shift in faculty interest as well as the graduate students' changing needs; but this should be left up to the individual caucuses. Our committee decided against deleting any course numbers at this time since it is easier to reuse an existing course number for a newly designed course than to add a course number.

### **3. Changes to the joint master's degree program with education**

The Graduate Program Committee adopted new requirements for the joint master's degree in mathematics and education. This master's degree program had been dormant for over a decade, but due to a new NSF grant in mathematics education, there is renewed interest in this program. The changes to the program prescribe in more detail the math courses to be taken, in particular in analysis.