

SCIENTIFIC PERIODICALS IN THE UNIVERSITY OF MALAYA LIBRARY - A BIBLIOMETRIC EVALUATION

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ABSTRACT

Examines the availability of top ranking scientific periodicals in the University of Malaya Library (UML). The study is based on journal titles listed in the Subject Category Listing of the Journal Citation Report (JCR), 1994 which covers 16 subject fields such as Biochemistry and Molecular Biology; Biology; Cell Biology; Chemistry; Analytical Chemistry; Physical Chemistry, Ecology; Genetics and Hereditary, Geology; Geosciences; Mathematics; Applied Mathematics; Physics; Applied Physics; Plant Sciences and Zoology. The study shows that of the first fifty titles listed under each category 72% are available in Plant Sciences and Mathematics, 60-70% are available in Geosciences, Geology, Ecology and Biochemistry and Molecular Biology, 50-59% are available in Zoology, Applied physics, Physics, Applied Mathematics, Genetics and Heredity, Physical Chemistry and Chemistry. The availability in other science fields such as Analytic Chemistry, Cell Biology and Biology is 46%.

Keywords: University of Malaya Library; Scientific periodicals; Collection evaluation; Bibliometrics; Periodicals availability study; Serials evaluation; Core journals; Ranked scientific journals.

INTRODUCTION

Scientific periodicals form the backbone of scientific research. With the advent of the scientific periodicals in 1665, it has become the most important vehicle of scientific communication in the world. Of the various forms of materials requested from the British Library Lending Division, now called British Library Document Supply Centre (BLDSC) in the year 1978/79, serials accounted for 62.3% (British Library, 1983). Another use study concerning zoological literature (Begum and

Rejendra, 1996) shows that journals comprised on an average 80% of the literature used by the scientists under study. These studies indicate the importance of scientific periodicals in supporting scientific research. The number of scientific periodicals is on the rise as indicated by Table 1. Gupta and Nathan (1979) estimated the total number of current scientific periodicals in the world as 50,000 in 1973. If this estimate is true, then it can be postulated that the present day figure should well be around 70,000. The BLDSC is known to hold the largest collection of scientific periodicals totaling

around 50,000 or more. It is not possible for most libraries to emulate the BLDSC's holding simply because of financial constraints. Neither is there a need to acquire all scientific journals published. On the 1973 figure of 50,000 scientific periodicals, Garfield commented that "it is safe to say that that over 90 percent of these publications are of minor significance. *SCI* [*Science Citation Index*] covered about 2,500 carefully selected journals that year" (Garfield, 1983, 1996). In 1995, *SCI* covered 3,300 journals mainly based on impact factor (Institute of Scientific Information. Products and Services, 1966). The idea of impact factor was first advanced by Garfield in 1955 when he proposed the compilation of comprehensive scientific citation indexes.

Table 1: Growth of Scientific Periodicals

Year	Number	Remarks
1665	2	
1800	100	
1900	10,000	
1925/27	25,000	Current & ceased
1934	36,000	Current & ceased
1953	50,000	Current & ceased
1963	60,000	Current & ceased
1963	35,000 ±10%	Current
1973	50,000	Current

Impact factor

The impact factor (I_f) can be defined as the ratio of citations received by source items such as research papers, short communications and review papers to the

sum of source item published over a fixed period of time (Garfield, 1955). The impact factor used in the *Journal Citation Re-port* of the *Science Citation Index (SCI JCR)* is mathematically expressed as:

$$I_f(J_y) = \frac{C_1 + C_2}{S_1 + S_2}$$

Where;

$I_f(J_y)$ = Impact factor of the journal J for the year Y

C_1 = Number of citations received by the S_1 source items in the year Y

C_2 = Number of citations received by the S_2 source items in the year Y

S_1 = Number of source items published in the journal J in the year Y - 1

S_2 = Number of source items published in the journal J in the year Y - 2

With a concrete example, the impact factor can be explained as follows. *Journal of Documentation (J Doc)* published 18 and 13 source items in 1988 and 1989 respectively. The source items received respectively 9 and 10 citations in the year 1990. Therefore, the I_f of *Journal of Documentation* for the year 1990 will be:

$$I_{f(J\ Doc)} = \frac{10 + 9}{18 + 13} = 0.613$$

A large ratio indicates that each source item on an average was cited several times and suggests the source has a large impact. Since 1975 *SCI JR* is being published annually. Among other data *SCI JCR*

provides title listings by subject categorisation. Journal titles in each category are ranked by impact factor. This listing can be used in the evaluation of a journal collection because the impact factor by and large reflects the quality of the journals in each field.

OBJECTIVE

The objective of the study is to find out the availability of top ranking journals in the University of Malaya Library whereby the strength and weaknesses of the collection devoted to each field will be known.

SCOPE

The study cover journals pertaining to Mathematics (General and Applied); Physics (General and Applied); Chemistry (General, Analytical and Physical); Geology and Geosciences; Biology (General, Cell Biology, Biochemistry and Molecular Biology, Ecology, Genetics and Heredity, Plant Sciences and Zoology. Only such journals as are currently being received has been taken into consideration. Journals on order or discontinued have been excluded.

METHODOLOGY

Comparing the availability of documents in a library with a standard list is one of the well-known methods of evaluation. For this study *SCI JCR 1994* has been used. Part 4 of the publication provides the subject category listing of periodicals ranked by impact factor. The first fifty periodicals listed under each of the 16 chosen science categories formed the sample of the study. Each of the titles was then checked against the University

of Malaya Library (UML) online catalogue and the availability was recorded and analysed. The availability ratings are then given to UML's holding of titles in each subject category in accordance to a scale of measurement which ranges from Excellent (80% and above) to Very poor (below 30%)(Table 2).

Table 2: Scale of Measurement

Percentage of Availability	Grade
80% and above	Excellent
60 - 79%	Very good
45 to 59%	Good
30 to 44%	Poor
Below 30%	Very poor

RESULTS

General and Applied Mathematics

SCI JCR provides two categorisation for this subject field, that is General and Applied Mathematics. (Table 3 and 4). A total of 124 titles has been listed under General Mathematics wherein *Acta Math - Djursholm* ranks first with the impact factor of 1.704. It may be noted that the impact factor of both General and Applied Mathematical journals are quite low compared with the other fields of science. *Vestn Mosk U Mat M+* is the 124th journal in the list with an impact factor of 0.004. For this study, mathematical journals which are not listed in *SCI JCR* is considered as minor, as their impact factor have not been ascertained.

The first fifty titles listed in Tables 3 and 4 were checked against the UML online catalogue. The impact factor of the 50th

Table 3 : The Status of UML's Holding of 50Top Ranked SCI Journals in Mathematics

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	Acta Math-Djursholm	✓	1.704	>10.0
2	B Am Math Soc	✓	1.445	>10.0
3	Ann Math	✓	1.449	>10.0
4	Commun Pur Appl Math	✓	1.282	>10.0
5	J Classif	✓	1.000	6.6
6	Invent Math	✓	0.951	>10.0
7	Constr Approx	x	0.828	5.6
8	Mem Am Math Soc	✓	0.827	>10.0
9	Ann Math Stud	✓	0.800	>10.0
9	J Differ Geom	✓	0.800	8.5
11	P Lond Math Soc	✓	0.768	>10.0
12	Discrete Comput Geom	x	0.764	4.6
13	Ann Sci Ecole Norm S	x	0.733	>10.0
14	Topology	✓	0.730	>10.0
15	J Comb Theory B	✓	0.669	>10.0
16	Mathematica	✓	0.667	7.3
17	Adv Math	✓	0.660	>10.0
18	J Funct Anal	✓	0.647	8.6
19	Duke Math J	✓	0.607	>10.0
19	J Differ Equations	✓	0.607	8.6
21	J Math Pure Appl	x	0.596	>10.0
22	J Reine Angew Math	x	0.557	>10.0
23	Am J Math	✓	0.553	>10.0
24	P Roy Soc Edinb A	✓	0.517	7.2
25	Math Ann	x	0.512	>10.0
26	J Lond Math Soc	✓	0.485	>10.0
27	Lect Notes Math	✓	0.483	>10.0
28	Commun Part Diff Eq	x	0.479	7.1
29	Compos Math	✓	0.478	9.8
30	Random Struct Algor	x	0.471	
31	J Algebra	✓	0.468	8.9
32	T Am Math Soc	✓	0.460	>10.0
33	Calc Val Partial Dif	x	0.450	
34	Math Syst Theory	✓	0.429	>10.0
34	P Edinburgh Math Soc	✓	0.429	9.2
36	Math Proc Cambridge	✓	0.417	>10.0
37	J Approx Theory	✓	0.410	9.0
38	Indiana U Math J	✓	0.400	>10.0
39	Math Z	x	0.384	>10.0
40	Comment Math Helv	x	0.382	>10.0
41	Pac J Math	✓	0.380	>10.0
42	Nonlinear Anal-Theor	x	0.380	6.6
43	Forum Math	x	0.371	
44	Combinatorica	✓	0.370	8.7
45	Israel J Math	✓	0.364	>10.0
46	J Pure Appl Algebra	✓	0.359	6.5
47	Nagoya Math J	x	0.352	>10.0
48	J Math Anal Appl	✓	0.338	>10.0
49	Glasgow Math J	✓	0.337	5.5
50	Can J Math	✓	0.336	>10.0
Total	50	36 72%		

journals, i.e. *Can J Math* and *Appl Numer Math* are 0.336 and 0.350 respectively. In General Mathematics the status of UML's holding of 50 top ranked *SCI*

journals is 36 (72%). Of the 10, 20, 30 and 40 journals of the world 9, 17, 22, 30 are available respectively giving a clear indication that UML's collection in

Table 4 : UML's Holding of 50Top Ranked SCI Journals in Applied Mathematics

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	J Nonlinear Sci	x	1.844	2.7
2	Nonlinearity	x	1.474	3.7
3	Commun Pur Appl Math	✓	1.282	>10.0
4	Siam J Sci Comput	x	1.229	7.1
5	Siam Rev	✓	1.216	>10.0
6	J Math Chem	x	1.032	3.0
7	Siam J Numer Anal	✓	1.021	>10.0
8	Int J Numer Math Eng	x	1.002	8.5
9	Siam J Matrix Anal A	✓	1.000	3.0
10	Inverse Probl	x	0.980	4.9
11	Siam J Control Optim	x	0.968	8.4
12	Math Oper Res	x	0.864	8.7
13	Siam J Math Anal	✓	0.765	7.7
14	Math Program	✓	0.763	9.0
15	Numer Math	✓	0.753	>10.0
16	Siam J Appl Math	✓	0.743	>10.0
17	Siam J Comput	✓	0.727	9.7
18	IMA J Appl Math	✓	0.690	7.6
19	Stud Appl Math	✓	0.673	>10.0
20	Q J Mech Appl Math	✓	0.658	>10.0
21	Math Comput	✓	0.649	>10.0
22	Inform Comput	✓	0.639	>10.0
23	Ann I H Poincare-An	x	0.623	7.8
24	Fuzzy Set Syst	x	0.610	6.1
25	J Math Pure Appl	x	0.596	>10.0
26	Math Control Signal	x	0.595	5.3
27	Appl Math Opt	✓	0.574	7.5
28	Q Appl Math	✓	0.545	>10.0
29	ACM T Math Software	✓	0.543	>10.0
30	P Roy Soc Edinb A	✓	0.517	7.2
31	Commun Part Dif Eq	x	0.479	7.1
32	Commun Appl Numer M	x	0.476	5.7
33	Siam J Discrete Math	x	0.475	4.1
34	Random Struct Algor	x	0.471	
35	Algorithmica	x	0.463	6.1
36	Nonlinear Sci Today	x	0.450	
36	J Aust Math Soc B	✓	0.450	7.4
38	J Algorithm	x	0.430	7.6
38	Linear Algebra Appl	✓	0.430	7.1
40	IMA J Numer Anal	✓	0.420	6.5
41	Adv Appl Math	x	0.400	>10.0
42	Z Angew Math Phys	✓	0.388	>10.0
43	Nonlinear Anal-Theor	x	0.380	6.6
44	Numer Func Anal Opt	x	0.378	4.9
45	Forum Math	x	0.371	
46	Commun Numer Meth En	x	0.367	
47	Ergod Theor Dyn Syst	✓	0.364	5.0
48	J Pure Appl Algebra	✓	0.359	6.5
48	J Symb Comput	✓	0.359	5.2
50	Appl Numer Math	x	0.350	5.2
Total	50	25 50%		

General Mathematics is very good. UML's holding of top 50 ranking titles in Applied Mathematics is good at 50%. When the spread of UML's holding of the top 25 ranked titles in both categories is observed the measures achieved remain the same as follows; General Mathematics 76% (19/25 - very good) and Applied Mathematics 56% (14/25 - good).

General and Applied Physics

Within the field of General Physics and Applied Physics *SCI JCR* listed 62 and 52 titles respectively ranked by impact factors. When the 50 top ranked journal titles listed in each category were compared against the UML's holdings, it was found that on the whole UML achieve a "good" measure at 54% in both categories (Tables 5, 6). In these categories the impact factor of titles listed are reasonably higher than those in Mathematics. The highest impact factor is achieved by *Rev Mod Physics* listed under General Physics (14.462) and *Mat Sci Eng R* (4.792) listed under Applied Physics. The 50th titles obtained 0.297 and 0.129 respectively under each category. Titles in General Physics obtained a noticeably higher impact factor than those listed under Applied Physics. Observation of titles listed within the top 25 in both categories indicates that UML's holding scores better with 76% (19/25 - very good) in General Physics and 68% (17/25 - very good) in Applied Physics. This seems to indicate that UML attempts to acquire Physics journals in the higher ranking positions. This may in turn have influenced a highly enterprising research environment within the Department of Physics which is responsible for publishing

Table 5 : The Status of UML's Holding of Top 50 Ranked SCI Journals in Physics

Rank	Journal Titles	Hold- ing in UML	Impact Factor	Cited Half Life
1	Rev Mod Phys	✓	14.462	>10.0
2	Rep Prog Phys	x	6.727	9.1
3	Phys Rev Lett	✓	6.626	5.3
4	Phys Rep	✓	6.541	8.3
5	J Phys Chem Ref Data	✓	5.824	9.1
6	Phys Lett B	✓	3.056	4.8
7	Europhys Lett	✓	2.662	3.5
8	Phys Today	✓	2.642	3.9
9	Phys Rev A	✓	2.292	6.1
10	Physica D	✓	2.070	5.7
11	Ann Phys-New York	✓	1.979	>10.0
12	J Phys Soc Jpn	✓	1.920	9.2
13	Riv Nuovo Cimento	x	1.792	8.2
14	J Phys A-Math Gen	✓	1.779	5.7
15	J Phys I	x	1.773	2.4
16	Classical Quant Grav	x	1.652	3.6
17	Usp Fiz Nauk+	x	1.398	>10.0
18	Few-Body Syst	✓	1.377	3.9
19	Physica A	✓	1.310	4.4
20	P Roy Soc Lond A Mat	✓	1.272	>10.0
21	Phys Lett A	✓	1.228	6.3
22	Prog Theor Phys	✓	1.182	>10.0
23	Ann Phys-Leipzig	x	1.147	>10.0
24	Prog Theor Phys Supp	✓	1.029	8.4
25	Phys Scripta	✓	0.991	6.4
26	Jetp Lett+	✓	0.917	9.1
27	ZH Eskp Teor Fiz+	x	0.883	>10.0
28	Fortschir Phys	x	0.800	8.8
29	Contemp Phys	✓	0.750	9.5
30	Gen Relat Grav	✓	0.670	9.1
31	Helv Phys Acta	x	0.657	>10.0
32	Z Naturforsch A	x	0.630	>10.0
33	Aust J Phys	✓	0.629	>10.0
34	Ann I H Poincare-Phys	x	0.597	7.0
35	Wave Motion	x	0.586	6.2
36	Ann Phys-Paris	x	0.569	9.7
37	Am J Phys	✓	0.550	>10.0
38	Acta Phys Pol B	x	0.536	6.7
39	Nuovo Cimento D	x	0.463	4.8
40	Found Phys	x	0.441	7.2
41	Can J Phys	✓	0.408	>10.0
42	Theor Math Phys+	x	0.395	>10.0
43	Acta Phys Pol A	x	0.346	6.5
44	Pramana-J Phys	x	0.345	6.5
45	Int J Theor Phys	x	0.345	6.0
46	Czech J Phys	x	0.330	9.4
47	Chinese J Phys	x	0.330	2.7
48	Found Phys Lett	x	0.306	
49	Nuovo Cimento B	✓	0.305	>10.0
50	Inst Phys Conf Ser	✓	0.297	5.2
Total	50	27 54%		

Table 6 : The Status of UML's Holding of Top 50 Ranked SCI Journals in Applied Physics

Rank	Journal Titles	Hold- ing in UML	Impact Factor	Cited Half Life
1	Mat Sci Eng R	✓	4.792	4.4
2	Physica C	✓	3.258	3.3
3	Appl Phys Lett	✓	3.072	4.5
4	IEEE J Quantum Elect	✓	2.595	6.6
5	Neural Networks	x	1.939	4.5
6	J Vac Sci Technol A	x	1.771	5.0
7	Appl Phys B-Laser O	✓	1.765	4.7
8	J Vac Sci Technol B	x	1.704	3.7
9	J Appl Phys	✓	1.658	7.4
10	IEEE T Electron Dev	✓	1.630	6.4
11	Philos Mag B	✓	1.625	5.8
12	Appl Phys A-Mater	x	1.578	5.3
13	Supercond Sci Tech	✓	1.530	3.0
14	Philos Mag A	✓	1.493	6.6
15	Thin Solid Films	✓	1.409	6.1
16	Quantum Opt	✓	1.400	3.6
17	Plasma Chem Plasma P	x	1.380	5.6
18	J Supercond	x	1.360	2.7
19	IEEE Photonic Tech L	✓	1.244	2.7
20	J Low Temp Phys	✓	1.213	9.0
21	MRS Bull	x	1.173	2.9
22	Jpn J Appl Phys	✓	1.096	5.0
23	Rev Sci Instrum	✓	1.095	5.9
24	Top Appl Phys	✓	0.974	>10.0
25	Int J Thermophys	x	0.935	5.3
26	Appl Supercond	✓	0.929	1.5
27	Metrologia	x	0.906	6.0
28	J Phys D Appl Phys	✓	0.897	7.5
29	Int J Mod Phys B	x	0.860	3.2
30	Cryogenics	✓	0.818	4.8
31	Solid State Electron	✓	0.759	9.9
32	IEEE T Magn	✓	0.758	5.2
33	Mater Lett	x	0.660	4.1
34	IEEE T Semiconduct M	✓	0.581	3.6
35	Solid State Technol	x	0.571	7.5
36	J Electromagnet Wave	x	0.514	3.3
37	Vacuum	x	0.488	5.7
38	Infrared Phys Techn	x	0.483	7.0
39	J Phys III	✓	0.475	2.4
40	Int J Infrared Milli	x	0.442	4.9
41	Fiz Nizk Temp+	x	0.433	6.2
42	Opt Laser Technol	✓	0.416	6.0
43	Microelectron Eng	x	0.414	3.0
44	Kvantovaya Electron+	✓	0.409	8.5
45	Laser Part Beams	x	0.389	4.5
46	Pisma Zh Tekh Fiz+	x	0.323	5.9
47	Model Simul Mater Sc	x	0.304	
48	Vide	x	0.239	4.6
49	High Temp+	✓	0.173	7.7
50	ZH Tekh Fiz+	x	0.129	>10.0
Total	50	27 54%		

Jurnal Fizik Malaysia which is unranked but indexed and abstracted by an international information agency, INSPEC.

General, Physical and Analytical Chemistry

The *SCI JCR* listed 110 ranked titles under General Chemistry; 69 under Physical Chemistry and 50 under Analytical Chemistry. Titles in the former two categories achieve higher impact factor. The highest impact factor is obtained by *Chem Rev* (14.240) which ranked first under General Chemistry. In Physical Chemistry, the highest impact factor is achieved by *Surf Sci Rep* (9.088), while in Analytical Chemistry, *Anal Chem* ranked first with an impact factor of 4.609.

UML's holding of the top 50 ranked titles in all three subject categories measures good at 54% (General Chemistry); 58% (Physical Chemistry) and 46% (Analytical Chemistry) (Tables 7, 8, 9). When the top 25 titles are observed UML's holding remains as good except in Physical Chemistry where the 15 out of 25 (60%) titles are being held indicating that most of the titles held in the category are those which are positioned on the higher ranking end.

Geology and Geosciences

In the subject categories of Geology and Geosciences *SCI JCR* listed 59 and 89 titles respectively. The impact factor of titles in the Geosciences are considerably higher than those listed under Geology. The highest impact factor (If) is achieved by *Rev Geophys* listed under Geosciences with an If of 4.314, while *Am j Sc* which

Scientific Periodicals in the University of Malaya Library

Table 7 : The Status of UML's Holding of Top 50 Ranked SCI Journals in Chemistry

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	Chem Rev	✓	14.240	6.2
2	Accounts Chem Res	✓	9.126	8.2
3	Abstr Pap Am Chems	✓	8.000	
4	Angew Chem Int Edit	✓	6.327	6.2
5	J Phys Chem Ref Data	✓	5.824	9.1
6	J Am Chem Soc	✓	5.039	9.7
7	Chem Soc Rev	✓	4.913	6.3
8	Top Curr Chem	x	4.000	8.5
9	J Comput Chem	✓	3.769	5.5
10	Chem Res Toxicol	x	3.395	3.2
11	J Chem Soc Chem Comm	x	2.575	7.0
12	Bioconjugate Chem	x	2.420	2.9
13	Helv Chim Acta	✓	2.058	>10.0
14	Chem Ber	x	1.983	>10.0
15	Chem Senses	✓	1.881	5.1
16	Pharmaceut Res	x	1.838	3.7
17	J Chem Inf Comp Sci	✓	1.803	3.7
18	Mar Chem	x	1.691	6.7
19	Israel J Chem	x	1.593	>10.0
20	New J Chem	x	1.584	5.7
21	Chirality	x	1.561	2.9
22	Environ Toxicol Chem	✓	1.551	4.4
23	J Control Release	x	1.526	4.5
24	J Nat Products	✓	1.498	4.5
25	Chem-Biol Interact	x	1.490	8.0
26	Chem Lett	✓	1.436	6.2
27	Pure Appl Chem	✓	1.403	8.5
28	Comput Chem	x	1.380	8.5
29	J Phys Chem Solids	✓	1.350	>10.0
30	J Pharm Sci	✓	1.310	>10.0
31	Recl Trav Chim Pay B	x	1.244	>10.0
32	Liebigs Ann Chem	✓	1.183	>10.0
33	B Soc Chim Fr	x	1.156	>10.0
34	Can J Chem	✓	1.127	>10.0
35	Chem Pharm Bull	✓	1.099	7.7
36	Acta Chem Scand	✓	1.053	>10.0
37	J Math Chem	x	1.032	3.0
38	Adv Mater Opt Electr	x	0.957	1.6
39	J Chem Eng Data	✓	0.930	>10.0
40	Magn Eson Chem	✓	0.924	4.6
41	Agents Actions	✓	0.923	5.9
42	Pharm Weekblad	✓	0.910	5.1
43	Aust J Chem	✓	0.903	>10.0
44	Adv Chem Series	✓	0.892	>10.0
45	Solvent Extr ion Exc	x	0.869	6.2
46	Res Chem Intermediatr	x	0.867	2.8
47	B Chem Soc of Jpn	✓	0.845	>10.0
48	J Inclus Phenom Mol	x	0.839	5.3
49	Struct Chem	x	0.833	3.3
50	ACS Sys Ser	✓	0.828	5.3
Total	50	27 54 %		

Table 8 : The Status of UML's Holding of Top 50 Ranked SCI Journals in Analytical Chemistry

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	Anal Chem	✓	4.609	8.2
2	J Am Soc Mass Spectr	x	3.604	2.2
3	Crit Rev Anal Chem	✓	3.409	6.7
4	J Chromatogr A	✓	2.523	6.7
5	Rapid Commun Mass Sp	✓	2.484	2.9
6	J Chemometr	x	2.407	3.9
7	J Chromatogr Sci	x	2.315	8.1
8	HRC-J High Res Chrom	x	2.228	4.6
9	TRAC-Trend Anal Chem	x	2.188	4.0
10	Adv Chromatogr	✓	2.167	8.2
11	J Microcolumn Sep	x	2.127	3.4
12	J Electroanal Chem	✓	2.020	7.7
13	LC GC-Mag Sep Sci	x	2.000	3.2
14	Spectrochim Acta Rev	✓	1.938	3.7
15	Chromatographia	x	1.885	5.1
16	Analyst	✓	1.816	6.8
17	Chemometer Intell Lab	x	1.752	3.0
18	Anal Chim Acta	✓	1.696	6.7
19	Electroanal	x	1.589	3.2
20	J Liq Chromatogr	x	1.432	5.1
21	Phytochem Analysis	x	1.395	2.5
22	JPC-J Planar Chromat	x	1.394	3.2
23	J Chromatogr B	✓	1.209	4.1
24	Talanta	✓	1.167	8.7
25	VIB Spectrosc	✓	1.098	3.3
26	Anal Sci	x	0.979	3.8
27	Biomed Chromatogr	x	0.977	3.5
28	Fresen J Anal Chem	x	0.975	6.1
29	Int J Environ An Ch	✓	0.973	5.7
30	Microchim Acta	x	0.965	6.9
31	Anal Lett	x	0.950	5.6
32	Separ Purif Method	✓	0.875	8.9
33	Separ Sci Technol	✓	0.838	7.0
34	Anal Instrum	x	0.815	7.2
35	J Anal Appl Pyrol	x	0.771	5.5
36	J Aoac Int	✓	0.762	2.1
37	Am Lab	x	0.664	4.8
38	J Labelled Compd Rad	x	0.647	5.4
39	Microchem J	✓	0.638	6.8
40	J Radioan Nucl Ch Ar	✓	0.613	3.1
41	Thermochim Acta	✓	0.612	5.9
42	Analisis	x	0.588	4.2
43	J Therm Anal	x	0.441	6.7
44	J Radioan Nucl Ch Le	✓	0.408	4.0
45	Commun Soil Sci Plan	✓	0.394	6.9
46	Sov Radiochem+	x	0.359	8.4
47	Bunseki Sagaku	x	0.345	9.2
48	J Anal Chem+	✓	0.306	9.1
49	Chem Anal-Warsaw	x	0.293	8.6
50	Radiochemistry+	✓	0.000	
Total	50	23 46%		

Table 9 : The Status of UML's Holding of Top 50 Ranked SCI Journals in Physical Chemistry

Rank	Journal Titles	Hold- ing in UML	Impact Factor	Cited Half Life
1	Surf Sci Rep	x	9.088	5.6
2	Annu Rev Phys Chem	✓	8.524	7.4
3	Adv Phys Org Chem	✓	7.889	>10.0
4	Adv Catal	✓	6.636	>10.0
5	Appl Catal B-Environ	✓	6.319	1.8
6	J Phys Chem Ref Data	✓	5.824	9.1
7	Catal Rev	x	4.708	>10.0
8	Struct Bond	x	4.652	>10.0
9	Int Rev Phys Chem	x	4.333	3.7
10	J Am Soc Mass Spectr	x	3.604	2.2
11	J Phys Chem-US	✓	3.242	6.3
12	Langmuir	✓	3.232	3.3
13	Surf Sci	x	2.745	6.7
14	Chem Mater	x	2.679	2.9
15	Tetrahedron-Asymmetr	✓	2.594	2.4
16	J Catal	✓	2.492	9.1
17	Adv Colloid Interfac	✓	1.847	8.6
18	Zeolites	✓	1.829	5.5
19	Catal Lett	x	1.816	2.9
20	Theor Chim Acta	✓	1.750	>10.0
21	Surf Interface Anal	x	1.738	4.9
22	Prog Surf Sci	x	1.700	7.3
23	J Colloid Interf Sci	✓	1.620	>10.0
24	Carbon	✓	1.619	7.1
25	J Mol Catal	✓	1.582	5.0
26	J Chem Soc Faraday T	✓	1.560	3.2
27	J Chem Soc Perk T 2	✓	1.536	7.7
28	J Mater Chem	✓	1.524	2.4
29	Int J Quantum Chem	✓	1.495	8.7
30	Microporous Mater	x	1.429	
31	Appl Catal A-Gen	✓	1.421	2.1
32	Colloid Surface	✓	1.401	5.5
33	J Solid State Chem	✓	1.397	6.6
34	Catal Today	x	1.373	3.6
35	J Supercrit Fluid	x	1.361	3.2
36	Intermetallics	x	1.348	
37	J Photoch Photobio A	x	1.311	3.1
38	Int J Chem Kinet	x	1.298	7.9
39	Ber Bunsen Phys Chem	x	1.230	8.8
40	Biophys Chem	✓	1.157	7.7
41	Appl Surf Sci	x	1.144	3.8
42	J Phys Org Chem	x	1.114	3.1
43	Vib Spectrosc	✓	1.098	3.3
44	Solid State Ionics	✓	1.089	6.0
45	Faraday Discuss	✓	1.077	>10.0
46	Phys Chem Glasses	x	1.000	>10.0
47	Theochem-J Mol Struc	✓	0.991	4.0
48	J Alloy Compd	x	0.961	1.8
49	J Chem Thermodyn	✓	0.947	9.7
50	Food Hydrocolloid	✓	0.943	4.3
Total	50	58%		

ranked first in Geology has an IF of 2.394. The 50th ranked titles, *ISPRS J Photogramm* and *Comput Geosci* achieved IFs of 0.282 and 0.514 respectively.

In both categories, UML's holdings of the 50 top ranked titles measure as very good being 62% in Geology and 60% in the Geosciences (Tables 10, 11). A glance at the UML's holdings of the top 25 titles in both categories revealed that for Geology 80% (20/25 - excellent) of the titles are being held and similarly 76% (19/25 - very good) of titles in Geosciences. This indicate that in these subject categories UML holds a high proportion of titles on the higher ranking end providing sufficient support for scientific research in these fields. Again this may have influenced the active commitment of the Geology Department which publishes two scholar-ly journals *Warta Geologi* and *Bulletin of the Geological Society*. Both these journals are being covered by an international indexing and abstracting agency such as *Georef* and *Geographical Abstracts*..

Biological Sciences

In this section five subject categories are being considered, which includes General Biology, Biochemistry and Molecular Biology, Cell Biology, Ecology and Genetics & Heredity. The *SCI JCR* listed 57 titles in Biology; 74 titles in Cell Biology; 193 titles in Biochemistry & Molecular Biology; 72 titles in Ecology and 73 titles in Genetics & Heredity. In all 5 categories the impact factors achieved by the ranked titles are

Table 10: The Status of UML's Holding of Top 50 Ranked SCI Journals in Geology

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	Am J Sci	✓	2.394	>10.0
2	Contrib Mineral Petr	x	2.319	9.8
3	Geol Soc Am Bull	✓	2.172	>10.0
4	Geology	✓	2.053	5.7
5	J Metamorph Geol	x	1.886	4.7
6	J Geol	✓	1.873	>10.0
7	J Petrol	✓	1.736	8.6
8	Am Mineral	✓	1.693	>10.0
9	AAPG Bull	✓	1.658	>10.0
10	Quaternary Res	✓	1.575	9.1
11	Quaternary Sci Rev	x	1.556	4.9
12	J Sediment Petrol	✓	1.514	>10.0
13	T Roy Soc Edin-Earth	✓	1.337	3.4
14	Lithos	✓	1.338	8.3
15	Geomorphology	x	1.300	2.7
16	New Zeal J Geol Geop	✓	1.194	>10.0
17	Sedimentology	✓	1.174	>10.0
18	Precambrian Res	✓	1.145	6.2
19	Chem Geol	✓	1.136	6.8
20	Econ Geol Bull Soc	✓	1.135	>10.0
21	Mar Geol	✓	1.061	8.9
22	Sediment Geol	✓	1.021	5.9
23	Geol Mag	✓	1.000	>10.0
24	Aust J Earth Sci	✓	0.933	4.3
25	Geo-Mar Lett	x	0.910	4.4
26	Terra Nova	x	0.903	3.3
27	Mar Petrol Geol	x	0.854	4.3
28	J Volcanol Geoth Res	✓	0.844	7.4
29	Geodin Acta	x	0.883	4.8
30	J Quaternary Sci	x	0.827	4.7
31	J Glaciol	✓	0.761	>10.0
32	Norsk Giol Tidsskr	✓	0.754	9.3
33	Miner Dipsita	✓	0.711	7.4
34	B Soc Geol Fr	x	0.703	9.3
35	Boreas	x	0.621	8.9
36	Math Geol	✓	0.615	5.8
37	Miner Petrol	x	0.571	4.2
38	Eclogae Geol Helv	✓	0.557	>10.0
39	Photogramm Eng Rem S	✓	0.538	6.6
40	B Can Petrol Geol	x	0.531	>10.0
41	B Cent Rech Expl	x	0.487	
42	Scot J Geol	✓	0.474	>10.0
43	Carbonite Evaporite	x	0.441	
44	Cretaceous Res	x	0.418	4.5
45	Atlantic Geol	x	0.410	
46	J Petrol Geol	✓	0.400	7.5
47	Geol Rundsch	✓	0.382	8.6
48	Polar Res	x	0.333	4.7
49	Geogr Phys Quatern	x	0.283	7.1
50	Isprs J Photogramm	✓	0.282	
Total	50	31 62%		

Table 11 : The Status of UML's Holding of Top 50 Ranked SCI Journals in Geosciences

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	Rev Geophys	✓	4.314	<10.00
2	Meteoritics	x	4.067	3.5
3	Earth Planet Sc Lett	✓	2.951	9.4
4	Geochim Cosmochim Ac	✓	2.831	8.8
5	Annu Rev Earth Pl Sc	✓	2.730	8.4
6	Earth Sci Rev	✓	2.667	8.4
7	J Geophys Res	✓	2.305	7.2
8	Geophys Res Lett	✓	2.145	4.3
9	J Contam Hydrol	x	2.067	4.1
10	Tectonics	✓	1.961	5.7
11	J Geol Soc London	✓	1.823	7.5
12	Mar Geophys Res	✓	1.679	6.3
13	Quaternary Res	✓	1.575	9.1
14	Quaternary Sci Rev	x	1.556	4.9
15	Radiocarbon	x	1.548	8.0
16	J Struct Geol	✓	1.532	6.8
17	Geophys J Int	✓	1.371	9.4
18	Ieee T Geosci Remote	✓	1.356	5.4
19	Geomorphology	x	1.300	2.7
20	Org Geochem	✓	1.293	6.2
21	Phys Earth Planet In	x	1.204	7.7
22	New Zeal J Geol Geop	✓	1.194	>10.0
23	Ground water	✓	1.160	6.2
24	B Seismol Soc Am	✓	1.143	>10.0
25	Global Planet Change	✓	1.138	2.9
26	Techonophysics	✓	1.089	7.3
27	Ann Geophys	x	1.076	6.2
28	Mar Geol	✓	1.061	8.9
29	B Volcanol	✓	1.054	7.3
30	Biogeochemistry	✓	1.051	5.0
31	Can J Earth Sci	✓	1.050	8.2
32	Earth Surf Processes	x	1.017	6.5
33	Geostandard Newslett	x	1.000	5.4
34	Aust J Earth Sci	✓	0.933	4.3
35	Appl Geochem	x	0.916	4.6
36	Terra Nova	x	0.903	3.3
37	Z Geomorphol	✓	0.867	>10.0
38	Geophys Astro Fluid	x	0.833	6.4
38	Geodin Acta	x	0.833	4.8
40	J Quaternary Sci	x	0.827	4.7
41	Planet Space Sci	✓	0.826	>10.0
42	Geophysics	✓	0.824	9.4
43	Catena	✓	0.818	6.2
44	Prog Phys Geog	x	0.792	6.2
45	Dynam Atmos Oceans	x	0.782	7.7
46	J Hydrol	✓	0.779	7.4
47	Landscape Ecol	x	0.767	4.3
48	Surv Geophys	x	0.675	
49	J Coastal Res	x	0.588	3.8
50	Comput Geosci	x	0.514	5.6
Total	50	30 60%		

high, perhaps a reflection of the world's research activity in these fields. The highest IF score is obtained by *Faseb J* listed under Biology (15.115). In the other subject categories the highest scores were achieved by *Annu Rev Biochem* (in Biochemistry & Molecular Biology with 42.169); *Cell* (listed under Cell Biology, 39.191); *Ecol Monogr* (under Ecology, 4.838) and *Nat Genet* (listed under Genetics & Heredity, 22.568). It is also noticeable that some titles achieved ranking in more than one category. For example, *Faseb J* is ranked first under General Biology but 5th under Biochemistry & Molecular Biology (If=15.115). Similarly the journal *Cell* ranked second under Biochemistry (If=39.191) and first under Cell Biology. This indicates that in both categories the two above mentioned titles are frequently referred to in research articles.

UML's holding of the top 50 ranked titles in each of the 5 categories ranges from good to very good (Tables 12, 13, 14, 15, 16). The rating measure of "good" is achieved by UML's holding of titles in General Biology (46%); Cell Biology (46%) and Genetics & Hereditary (58%). UML measures "very good" for titles in the subject categories of Biochemistry (60%) and Ecology (60%). Observations of the top 25 titles in the 5 categories indicate that UML's holding patterns are as follows; Biochemistry, 76% (19 titles); General Biology, 60% (15 titles); Cell Biology, 56% (14 titles); Ecology, 60% (15 titles) and Genetics, 56 (14 titles).

Table 12 : Status of UML's Holding of Top 50 Ranked SCI Journals in Biology

Rank	Journal Titles	Hold- ing in UML	Impact Factor	Cited Half Life
1	Faseb J	✓	15.115	4.5
2	Bioessays	x	6.017	2.9
3	Plant J	x	5.947	1.8
4	New Biol	x	5.625	3.7
5	Protein Sci	x	4.856	1.8
6	Dev Biol	x	4.468	7.3
7	Q Rev Biol	✓	3.633	>10.0
8	Biol Rev	✓	3.129	>10.0
9	Mol Biochem Parasit	x	3.063	4.2
10	P Roy Soc Lond B Bio	✓	2.790	>10.0
11	Life Sci	✓	2.500	8.1
12	Biofactors	x	2.500	3.9
13	Cladistics	✓	2.479	5.3
14	Philos T Roy Soc B	✓	2.190	9.0
15	Evol ecol	x	2.081	5.0
16	Bioscience	✓	2.041	7.2
17	J Biol Rhythm	x	1.984	5.1
18	J Exp Biol	✓	1.820	8.7
19	Adv Radiat Biol	✓	1.714	>10.0
20	Conserv Biol	✓	1.643	3.7
21	Chem Biol Interact	✓	1.490	8.0
22	Biosystems	✓	1.374	6.5
23	J Evolution Biol	x	1.314	3.7
24	Biol Bull	✓	1.121	>10.0
25	Hum Biol	✓	1.000	>10.0
26	Microsc Res Techniq	x	0.977	1.8
27	Biol J Linn Soc	✓	0.971	7.2
28	Am J Hum Biol	x	0.957	3.1
29	Biotropica	✓	0.872	7.9
30	Polar Biol	x	0.866	5.4
31	Biometals	x	0.853	
32	Origins Life Evol B	x	0.841	8.9
33	Ann Hum Biol	✓	0.747	9.0
34	Arch Ital Biol	x	0.739	>10.0
35	P Jpn Acad B Phys	✓	0.736	6.9
36	Endocyt Cell Res	x	0.588	
37	J Biol Reg Homeos Ag	x	0.571	
38	Arch Protistenkd	x	0.554	>10.0
39	Biologicals	x	0.529	3.1
40	J Hist Biol	✓	0.513	>10.0
41	J Bioscience	✓	0.432	7.1
42	Ann Appl Biol	✓	0.405	>10.0
43	Acta Biotheor	✓	0.377	>10.0
44	Ann Biol Paris	x	0.333	
45	Biol ZBL	x	0.298	>10.0
46	ZH Obsheh Biol	x	0.291	8.2
47	P Biol Soc Wash	x	0.240	>10.0
48	Nat Area J	x	0.222	
49	Ann Biol Clin Paris	x	0.218	5.5
50	Folia Biol Prague	x	0.213	8.1
Total	50	23 46%		

Table 13: UML's Holding of Top 50 Ranked SCI Journals in Biochemistry and Molecular Biology

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	Annu Rev Biochem	✓	42.169	7.1
2	Cell	✓	39.191	4.4
3	Annu Rev Cell Biol	✓	27.605	4.8
4	Trends Biochem Sci	✓	16.743	3.9
5	Faseb J	✓	15.115	4.5
6	Embo J	x	13.871	4.5
7	Crit Rev Biochem Mol	✓	13.815	6.6
8	Annu Rev Biochem Mol	✓	12.333	5.9
9	Mol Cell Biol	✓	10.195	4.3
10	Mol Biol Cell	x	10.051	2.2
11	Vitam Horm	✓	10.000	>10.0
12	Rev Physiol Bioch P	✓	9.667	8.2
13	Adv Enzymol Ramb	✓	9.150	>10.0
14	Structure	x	9.120	1.0
15	Dav Protein Chem	✓	9.000	>10.0
16	Plant cell	✓	8.847	3.1
17	J Biol Chem.	✓	7.716	5.5
18	Adv Sec Mess Phosph	✓	6.914	3.3
19	Prog Nucleic Acid Re	✓	6.444	5.2
20	Prog Biophys Mol Bio	✓	6.115	9.2
21	J Mol Biol	✓	6.018	7.7
22	Bioessays	x	6.017	2.9
23	Glycobiologi	x	5.950	2.3
24	Mol Pharmacol	x	5.927	4.9
25	J Biomol NMR	x	5.733	2.2
26	New Biol	✓	5.625	3.7
27	Proteins	✓	5.350	3.8
28	Biochemistry- USA	✓	5.234	5.8
29	Mol Microbiol	x	5.142	2.9
30	Mol Biol Evol	x	5.024	5.5
31	Cell Growth Differ	x	4.960	2.8
32	DNA Cell Biol	x	4.612	4.8
33	Hum Mol Genet	✓	4.528	1.6
34	J Neurochem	✓	4.525	6.0
35	J Lipid Res	✓	4.385	7.7
36	Biochem J	✓	4.262	7.0
37	Free Radical Bio Med	x	4.175	4.5
38	Nucleic Acids Res	✓	4.097	5.7
39	Protein engineering	x	4.062	3.7
40	Mamm Genome	x	4.006	2.1
41	Mol Plant Microbe In	x	3.920	3.1
42	Am J Resp Cell Mol	x	3.814	3.0
43	J Mol Evol	✓	3.777	5.5
44	FEBS Lett	✓	3.600	5.1
45	Eur J Biochem	✓	3.578	6.4
46	J Comput and Mol Des	x	3.494	3.6
47	Mol Carcinogen	x	3.477	3.3
48	Prog Lipid Res	x	3.419	7.2
49	Plant Mol Biol	x	3.415	3.7
50	Biochem Bioph Res Co	✓	3.400	5.6
Total	50	30 60%		

Table 14 : The Status of UML's Holding of Top 50 Ranked SCI Journals in Cell Biology

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	Cell	✓	39.191	4.4
2	J Cell Biol	✓	12.149	5.7
3	Mol Biol Cell	x	10.051	2.2
4	Structure	x	9.120	1.0
5	J Bioleneg Biomenbr	x	5.481	3.5
6	Int Rev Cytol	✓	5.264	9.1
7	Cell Growth Differ	x	4.960	2.8
8	Tissue Antigens	✓	4.784	3.6
9	DNA Cell Biol	✓	4.612	4.8
10	J Cell Sci	✓	4.336	4.3
11	Cell Calcium	x	4.113	4.2
12	Am J Resp Cell Mol	x	3.814	3.0
13	Cytometry	x	3.434	5.3
14	Cell Motil Cytoskel	x	3.310	4.7
15	J Histochem Cytochem	✓	3.296	>10.0
16	J Membrane Biol	✓	3.283	7.1
17	J Cell Physiol	✓	3.096	6.0
18	Exp Cell Physiol	✓	2.980	7.7
19	Cytokine	✓	2.734	3.3
20	Curr Top Cell Regul	✓	2.667	>10.0
21	Eur J Cell Biol	x	2.662	5.4
22	Mol Cell Endocrinol	✓	2.599	4.6
23	J Neurocytol	x	2.560	7.5
24	Cytogenet Cell Genet	x	2.533	4.5
25	Differentiation	✓	2.352	7.0
26	Matrix Biol	x	2.303	3.4
27	Histochemistry	✓	2.143	8.0
28	Cell Dhes Commun	✓	2.130	
29	Cell Tissue Res	x	2.065	8.2
30	Cell Immunol	✓	2.065	5.6
31	Cell Proliferat	x	1.849	2.6
32	Histopathology	✓	1.829	4.9
33	J Struct Biol	✓	1.829	3.3
34	Mol Cell Probe	x	1.773	3.3
35	Somat Cell Molec Gen	x	1.764	7.8
36	Protoplasma	✓	1.754	7.6
37	Anal Cell Pathol	x	1.727	3.1
38	Inflammation	x	1.658	4.7
39	Cell Mol Neurobiol	x	1.643	4.7
40	Histochem J	✓	1.524	7.8
41	Biol Cell	x	1.431	7.6
42	In Vitro Cell Dev-An	x	1.385	2.2
43	J Receptor Res	x	1.298	3.9
44	Anal Quant Cytol	x	1.274	5.6
45	Immunol Cell Biol	x	1.195	4.4
46	Pigm Cell Res	x	1.119	3.5
47	Cell Biol Int	✓	1.042	5.3
48	Connect Tissue Res	x	1.012	6.0
49	J Lipid Mediat Cell	x	0.964	3.4
50	Pathobiology	✓	0.915	3.4
Total	50	23 46%		

Table 15: The Status of UML's Holding of Top 50 Ranked SCI Journals in Ecology

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	Ecol Monogr	✓	4.838	>10.0
2	Annu Rev Ecol Syst	✓	4.825	>10.0
3	Trends Ecol Evol	x	4.106	3.8
4	Adv Microb Ecol	✓	4.053	8.3
5	Wildlife Monogr	✓	3.400	>10.0
6	Am Nat	✓	3.240	>10.0
7	Adv Ecol Res	✓	2.895	8.1
8	Ecology	x	2.818	>10.0
9	J Anim Ecol	✓	2.517	>10.0
10	Evolution	x	2.349	8.8
11	Evol Ecol	x	2.081	5.05.0
12	Mar Ecol Prog Ser	✓	1.827	5.7
13	Microbiol Ecol	✓	1.814	6.5
14	Oikos	✓	1.765	7.4
15	J Ecol	✓	1.672	>10.0
16	Conserv Biol	✓	1.643	3.7
17	Ecol Appl	x	1.556	2.4
18	Funct Ecol	x	1.514	4.2
19	Theor Popul Biol	✓	1.465	>10.0
20	Oecologia	✓	1.366	8.4
21	J Evolution Biol	x	1.314	3.7
22	Ecol Econ	x	1.313	3.4
23	J Exp Mar Biol Ecol	✓	1.268	8.8
24	Aust J Ecol	x	1.115	6.5
25	Vegetatio	x	1.049	7.3
26	J Chem Ecol	✓	1.048	5.6
27	Tree Physiol	x	1.030	4.3
28	J Appl Ecol	✓	1.013	>10.0
29	Trees Struct Funct	✓	0.921	4.8
30	J N Am Benthol Soc	x	0.920	5.2
31	Biotropica	✓	0.872	7.9
32	Polar Biol	x	0.866	5.4
33	Biodivers Conserv	✓	0.822	
34	J Wildlife Manage	✓	0.797	>10.0
35	J Biogeogr	✓	0.794	6.5
36	Landscape Ecol	x	0.767	4.3
37	Ecography	x	0.753	
38	Biochem Syst Ecol	✓	0.746	6.7
39	Biol Conserv	✓	0.745	6.4
40	J Veg Sci	x	0.739	3.1
41	Ecol model	✓	0.683	5.8
42	J Trop Ecol	✓	0.655	4.9
43	Environ Biol Fish	✓	0.634	7.4
44	Wetlands	x	0.548	4.6
45	J Arid Environ	x	0.545	5.0
46	ActaOecol	✓	0.543	3.5
47	Wildlife Res	x	0.511	2.3
48	Rev Ecol TerreVie	x	0.491	>10.0
49	Pedobiologia	✓	0.441	>10.0
50	J Soil Water Conserv	✓	0.439	8.1
Total	50	30 60%		

Table 16 : UML's Holding of Top 50 Ranked SCI Journals in Genetics and Hereditary

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	Nat Genet	x	22.568	1.7
2	Gene Dev	x	17.334	3.4
3	Annu Rev Genet	✓	14.000	6.1
4	Trends Genet	✓	10.110	3.7
5	Am J Hum Genetics	✓	8.598	3.8
6	Hum Gene Ther	x	7.438	2.3
7	Oncogene	✓	7.387	3.2
8	Adv Genet	✓	6.429	>10.0
9	Genomics	x	5.037	3.0
10	Gene Chromosome Canc	x	4.887	2.7
11	Genetics	✓	4.871	6.5
12	DNA Cell Biol	✓	4.612	4.8
13	Hum Mol Genet	✓	4.528	1.6
14	Pharmacogenetics	x	4.367	2.2
15	Trends Ecol Evol	x	4.106	3.8
16	Hum Mutat	x	4.038	1.9
17	Mamm Genome	x	4.006	2.1
18	J Mol Evol	✓	3.777	5.5
19	Immunogenetics	✓	3.352	4.8
20	Mol Gen Genet	x	2.917	6.5
21	J Med Genet	✓	2.865	4.5
22	Environ Mol Mutagen	x	2.847	5.8
23	Hum Genet	✓	2.758	5.7
24	Theor Appl Genet	✓	2.536	4.9
25	Cytogenet Cell Genet	✓	2.533	4.5
26	Ann Hum Genet	✓	2.532	>10.0
27	Chromosoma	✓	2.513	9.6
28	J Neurogenet	x	2.500	7.2
29	Transgenic Res	x	2.403	2.0
30	Mutagenesis	x	2.381	4.4
31	Evolution	x	2.349	8.8
32	Gene	✓	2.305	6.3
33	Curr Genet	✓	2.217	4.7
34	Anim Genet	✓	2.151	3.2
35	Evol Ecol	x	2.081	5.0
36	Mutat Research	✓	1.975	6.6
37	Genet Res	x	1.943	>10.0
38	Cancer Genet Cytogen	✓	1.922	5.5
39	Somat Cell Molec Gen	x	1.764	7.8
40	Plasmid	✓	1.744	8.9
41	Genet Anal Tech Appl	x	1.735	3.3
42	Virus Genes	x	1.716	3.6
43	Am J Med Genet	✓	1.645	5.0
44	Genome	✓	1.623	3.9
45	Dev Genet	✓	1.616	4.2
46	J Hered	✓	1.533	>10.0
47	Genet Epidemiol	✓	1.518	5.2
48	Theor Popul Biol	✓	1.465	>10.0
49	Hereditas	✓	1.457	9.1
50	Behav Genet	x	1.373	7.3
Total	50	29 58%		

Plant Sciences and Zoology

In the categories of Plant Science and Zoology *SCI JCR* listed 130 and 94 ranked titles respectively. The titles in the former category achieved a higher impact factor ranging from the highest being obtained by *Annu Rev Plant Phys* with 14.809 to 0.788 obtained by *Can J Bot* (ranked 50th). In Zoology the highest impact factor is obtained by *Wildlife Monogr* with 3.400 and the lowest is *J Helminthol* (ranked 50th) with 0.423.

UML's holding of the top 50 ranked titles measures as very good in Plant Sciences (72%) and good for Zoology (50%) (Tables 17, 18). The measure of 72% of top 50 ranked titles is high and matched only by UML's holdings of top ranked Mathematics titles. When the holdings of the top 25 titles are studied it is revealed that UML's pattern of holdings remain consistent as 72% for Plant Sciences (18 titles) and 60% for Zoology (15 titles).

CONCLUSION

The performance of UML's holdings of 50 top ranked titles in 16 science categories based on the listings provided by *Journal Citation Report, 1994* is summarised as follows. (See Appendix). It is noticeable from the table that in some subject categories UML's holdings of top 25 ranked titles are better. This is exemplified by UML's holdings in Physical Chemistry, General Physics, Applied Physics, General Biology and Zoology.

Table 17 : The Status of UML's Holding of Top 50 Ranked SCI Journals in Plant Sciences

Rank	Journal Titles	Holding in UML	Impact Factor	Cited Half Life
1	Annu Rev Plant Phys	✓	14.809	7.8
2	Adv Bot Res	✓	9.250	9.0
3	Plant Cell	✓	8.847	3.1
4	Plant J	x	5.947	1.8
5	Crit Rev Phytopathol	✓	4.146	3.7
6	Annu Rev Phytopathol	✓	4.106	8.3
7	Mol Plant Microbe In	x	3.920	3.1
8	Bot Rev	✓	3.846	>10.0
9	Plant Physiol	✓	3.542	6.3
10	Plant Mol Biol	x	3.415	3.7
11	Plant Mol Gard	✓	3.337	6.5
12	Planta	✓	3.300	7.5
13	Photosynth Res	✓	2.903	4.5
14	Plant Cell Environ	✓	2.291	4.6
15	Phytopathology	✓	2.222	>10.0
16	Aust J Plant Physiol	✓	2.122	8.1
17	Plant Cell Physiol	x	1.957	6.6
18	J Phycol	✓	1.932	7.4
19	New Phytol	✓	1.896	7.5
20	Am J Bot	✓	1.776	>10.0
21	Exp Mycol	✓	1.736	6.2
22	Syst Bot	x	1.714	4.4
23	Bot Acta	x	1.652	3.4
24	Plant Cell Rep	✓	1.590	4.6
25	Sex Plant Reprod	x	1.556	3.4
26	Physiol Plantarum	✓	1.507	8.7
27	J Nat Products	✓	1.498	4.5
28	J Exp Bot	✓	1.463	7.7
29	Phytochem Analysis	x	1.395	2.5
30	Int J Plant Sci	✓	1.375	2.2
31	Physiol Mol Plant P	✓	1.354	5.0
32	Plant Sci	✓	1.257	6.1
33	Phycologia	✓	1.232	8.0
34	Phytochemistry	✓	1.157	7.6
35	Aust J Bot	✓	1.147	>10.0
36	J Plant Growth Regul	x	1.109	4.4
37	J Plant Physiol	✓	1.088	5.2
38	Ann Bot London	✓	1.066	>10.0
9	Vegetatio	✓	1.049	7.3
40	Planta Med	x	1.044	7.6
41	Tree Physiol	x	1.030	4.3
42	Plant Physiol Bioch	x	0.967	4.6
43	Plant Syst Evol	✓	0.922	5.7
44	Trees Struct Funct	✓	0.921	4.8
45	Plant Growth Regul	✓	0.913	4.6
46	Environ Exp Bot	x	0.907	6.0
47	Plant Pathol	✓	0.873	6.0
48	Brit Phycol J	✓	0.844	>10.0
49	Aquat Bot	✓	0.793	8.2
50	Can J Bot	✓	0.788	>10.0
Total	50	36 72%		

Table 18 : The Status of UML's Holding of Top 50 Ranked SCI Journals in Zoology

Rank	Journal Titles	Hold- ing in UML	Impact Factor	Cited Half Life
1	Wildlife Monogr	✓	3.400	>10.0
2	Behav Ecol	✓	2.351	3.2
3	J Eukaryot Microbiol	✓	2.000	1.4
4	Am Zool	x	1.967	>10.0
5	Behav Ecol Sociobiol	✓	1.850	7.4
6	Oikos	✓	1.765	7.4
7	Anim Behav	✓	1.724	7.7
8	J Protozool	✓	1.518	9.6
9	Physiol Zool	x	1.461	8.3
10	Ann Zool Fenn	x	1.386	9.3
11	Freshwater Biol	✓	1.305	6.6
12	J Exp Zool	✓	1.246	>10.0
13	J Med Primatol	x	1.098	4.5
14	J Comp Physiol B	✓	1.048	5.4
15	J Invertebr Pathol	x	0.996	9.4
16	Ethology	✓	0.967	5.2
17	Am J Primatol	x	0.948	6.2
18	Int J Primatol	x	0.947	7.0
19	Dis Aquat Organ	x	0.906	4.1
20	Neth J Zool	x	0.871	>10.0
21	Zool Sci	x	0.810	5.0
22	Behaviour	✓	0.803	>10.0
23	J Wildlife Manage	✓	0.797	>10.0
24	J Zool	✓	0.770	>10.0
25	Ethol Sociobiol	✓	0.760	7.0
26	J Mammal	✓	0.736	>10.0
26	Can J Zool	✓	0.736	9.0
28	Mammal Rev	x	0.708	8.6
29	J Fish Dis	x	0.691	7.7
30	Acta Zool Stockholm	x	0.688	>10.0
31	Primates	✓	0.642	>10.0
31	Insect Soc	x	0.642	9.9
33	Environ Biol Fish	✓	0.634	7.4
34	Herpetologica	x	0.630	>10.0
35	Zool J Linn Soc Lond	✓	0.629	>10.0
35	Behav Process	x	0.629	8.0
37	Mar Mammal Sci	x	0.620	5.1
38	J Nematol	✓	0.585	7.9
39	J Herpetol	x	0.570	7.8
40	Copeia	✓	0.559	>10.0
41	J Nat Hist	✓	0.556	7.7
42	Zool Scr	x	0.550	8.8
43	Aust J Zool	✓	0.525	>10.0
44	Wildlife Res	x	0.511	2.3
45	Veliger	x	0.500	>10.0
46	Zoo Biol	x	0.450	6.5
47	Malacologia	x	0.438	>10.0
48	Acta Protozool	x	0.435	>10.0
49	Am Malacol Bull	x	0.424	
50	J Helminthol	✓	0.423	>10.0
Total	50	25 50%		

In the other subject categories the reverse order is indicated where the performance on the top 25 ranked titles is revealed as

good and when 50 titles are considered the performance is rated as very good. This is exemplified by UML's holding in Genetics & Heredity. On the whole UML's holding of the top 50 ranked titles in the 16 science categories ranges from good to very good. In none of the fields under study are her holdings can be rated as excellent or poor.

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APPENDIX

UML's Performance on the Top 50 and 25 Ranked Titles Listed in 16 Science Categories by the *Journal Citation Index, 1994*

SUBJECT CATEGORIES	HOLDING OF RANKED TITLES			
	Out of 50	Rating	Out of 25	Rating
General Mathematics	36 72%	very good	19 76%	very good
Applied Mathematics	25 50%	good	14 56%	good
General Physics	27 54%	good	19 76%	very good
Applied Physics	27 54%	good	17 68%	very good
General Chemistry	27 54%	good	12 48%	good
Physical Chemistry	29 58%	good	15 60%	very good
Analytical Chemistry	23 46%	good	12 48%	good
Geology	31 62%	very good	20 80%	very good
Geosciences	30 60%	very good	19 76%	very good
General Biology	23 46%	good	15 60%	very good
Biochem. & Mol. Biology	30 60%	very good	19 76%	very good
Cell Biology	23 46%	good	14 56%	good
Ecology	30 60%	very good	18 60%	very good
Genetics & Heridity	29 58%	very good	14 56%	good
Plant Sciences	36 72%	very good	18 72%	very good
Zoology	25 50%	good	15 60%	very good