




UNIVERSITY OF MINNESOTA  
TWIN CITIES

Health Sciences Planning Office  
Physical Planning  
Box 75 Powell Hall  
4103 Powell Hall  
Minneapolis, Minnesota 55455  
(612) 373-8981

November 11, 1975

TO: Dean Irene Ramey  
Mr. Vic Scott  
Mrs. Cheri Perlmutter

FROM:  Paul J. Maupin

SUBJECT: Attached HEW report

The attached is a revised edition of Nursing participation  
for Unit F for your information and review.

rm

Attachment

cc: ✓ Linda Satorius  
Gary Zaworski

18. COSTS ELIGIBLE FOR FEDERAL PARTICIPATION  
(BY PROGRAMS)

6770

Revised June 1975

U. of Minnesota

A. Budget line	B. Total cost (col. E, item 16)	C. Total eligible cost	D. Amounts eligible for Federal participation G. (for each grant program)			
			1) Program code 43, 18.78% from item 17E or 17G	2) Program code 43, 10.84% from item 17E or 17G	3) Program code 43, 00.74% from item 17E or 17G	4) Program code 41, _____ from item 17E or 17G
1g. Building work	\$ 14,474,670	\$ 14,328,055	\$ 2,690,809	\$ 1,553,161	\$ 106,028	\$
2c. Site work	219,000	216,799	40,715	23,501	1,604	
3c. Off-site work	-	-				
4. Central utility plant	239,817	237,378	44,579	25,731	1,757	
6. Fixed equipment	824,030	815,679	153,185	88,410	6,036	
7c. A/E costs	1,418,235	871,235	163,618	94,442	6,447	
8. Movable equipment	2,293,155	2,149,208	403,621	232,974	15,904	
10. Contingency	458,631	930,918 <sup>?</sup>	174,826	100,912	6,889	
11. Purchase of Land	1,021,400	-				
12. Purchases of Building(s)						
13. Other						
15. Works of Art						
16. TOTALS (1g. through 15)	\$ 20,948,938	\$ 19,549,272	\$ 3,671,353	\$ 2,119,141	\$ 144,665	\$ 13,614,113
17. Amount of Fed. Assist Requested			\$ 2,459,807	\$ 1,419,824	\$ 96,926	\$ 976,557
18. Fed. Share Requested— Percentage			67 %	67 %	67 %	%

Total Federal share (Nursing) \$3,976,557

17. SPACE ALLOCATION BY GRANT PROGRAM

Revised June 1975

U. of Minnesota

A. Building identification (if more than one structure) <u>Bldg. "F" Nursing/Pharmacy</u>					
B. Gross area in facility <u>213,039</u> S.F. <i>(186,500)</i>		C. Net area in facility <u>111,584</u> S.F. <i>(104,355)</i> <span style="float: right;"><i>108,755</i></span>			
Alternate I	GRANT PROGRAMS				APPLICANT SPACE
	1) 43 Bacc. PROGRAM CODE	2) 43 Grad PROGRAM CODE	3) 43 C.E. PROGRAM CODE	4) 41 PROGRAM CODE	
D. Net area by program(s)	(1) 20,954 SF	(2) 12,100 SF	(1) 827 SF	56.384 SF	21,319 SF
E. Cost allocation ratio by programs <i>(D/C X 100—to two decimals)</i>	18.78 %	10.84 %	00.74 %	50.53 %	19.11 % <span style="float: right;"><i>= 15%</i></span>
Alternate II					
F. Gross area by program(s)	SF	SF	SF	SF	SF
G. Cost allocation ratio by programs <i>(F/B X 100—to two decimals)</i>	%	%	%	%	%

(1) Space requested

(2) Maximum space fundable (range 10,800 s.f. to 12,100 s.f.)

*Handwritten calculations:*  
 33,325  
 55,655  
 12,710  
 2,665  
 104,355

### C. Detailed Description of Unit F

Unit F will consist of eleven floors of space located directly north of adjoining Unit A. Three levels are below grade. Schematically for the College of Pharmacy, Floors 1-3 relate primarily to undergraduate teaching, Floors 4-5 is administrative as well as faculty/graduate space, and Floors 6-8 are designed primarily for faculty and graduate research space functions. A detailed floor by floor description of function follows.

#### Basement

This level will be the primary location for major mechanical components serving the new construction. Mechanical space on this floor will be an expansion of the facilities provided in Unit A. Steam from the University central plant will be piped via the tunnel to Unit A on this level. Switch gear, pumps, chillers, emergency generating equipment will be located on this floor as well as on Floor 8. Major utilities will be distributed in vertical utility shafts 12'-4" x 12'-4" in dimension located typically 49'-4" apart.

#### Floor 1

The Central Service Corridor for the Health Sciences on this level connects with a service corridor in Unit F and will provide access to the new receiving center, Unit E. Major program elements accommodated on this floor are: Shared Facilities; Central Supply with its support rooms of Receiving, Instrument Repair, Mechanical Workshop, and Glass Washing. Student Locker Facilities, along with general storage for the College of Pharmacy and the School of Nursing will also be provided on this level. Elevating for Unit F consists of three cars grouped in one bank with two of the cars primarily for public traffic, with the other car having two openings to serve as both a passenger-freight elevator. A separate receiving room adjoining or in close proximity with the passenger-freight elevator occurs on all floors.

#### Floor 2

Floor 2 of Unit F, one floor below street level, will be a main entry point for students attending lectures in the Auditoria and classrooms. Two 150 seat auditoriums with projection booths and support facilities in addition to two classrooms for 75 students which can be divided into smaller subunits are on this floor. The College of Pharmacy's Biological processes undergraduate lab is also on this floor along with support space. This laboratory accommodates up to 48 students per section.

#### Floor 3, Ground Level

Unit F at ground level will be occupied by the chemical processes undergraduate lab and the accompanying instrumentation lab. The pharmaceutical processes lab is also located on this floor. The Drug Reference area is located so that it might be used in conjunction with the undergraduate laboratories and have easy access for use by the rest of the College. Formal entry for the building is on this level with a stair connecting floor 2 and floor 4, permitting undergraduate students to work either up or down one level to attend their laboratories without taxing the elevator system.

#### Floor 4

School of Nursing.

#### Floor 5

Floor 5 of Unit F will provide a major horizontal connection between Millard Hall, Unit A, Unit B/C, and the Mayo Building. Functions which will be located on this floor include College Administration and the Department of Pharmacy Administration. In addition, shared space for Educational Development with its associated production, dark room, audio-visual, auto-tutorial space, and computer space will occupy this floor.

#### Floor 6

Graduate teaching and faculty laboratories along with the shared spaces of Chemical and Equipment storage, Central Instrument room, and Radiation Synthesis and Counting will be housed on this floor. Graduate labs have been planned on an open, modular basis so that they may be subdivided in the future if it is so desired. Faculty offices and laboratory space has been organized in conjunction with the graduate labs so as to achieve an appropriate distribution between the number of faculty members and graduate students. Special rooms, such as hydrogenation lab, chromatography lab, bio-process lab and a cold room are also accommodated on this floor. Student study space is also found on this floor.

#### Floor 7

The majority of Floor 7 will house graduate laboratories, faculty offices, and laboratories, for graduate teaching and faculty research. Shared animal quarters are located on this floor directly behind the elevator bank so that a connection for service, cage washing, and use by other departments is easily accessible. A student study space is also provided on this floor space for basic research (wet-bench) for the School of Nursing.

#### Floor 8

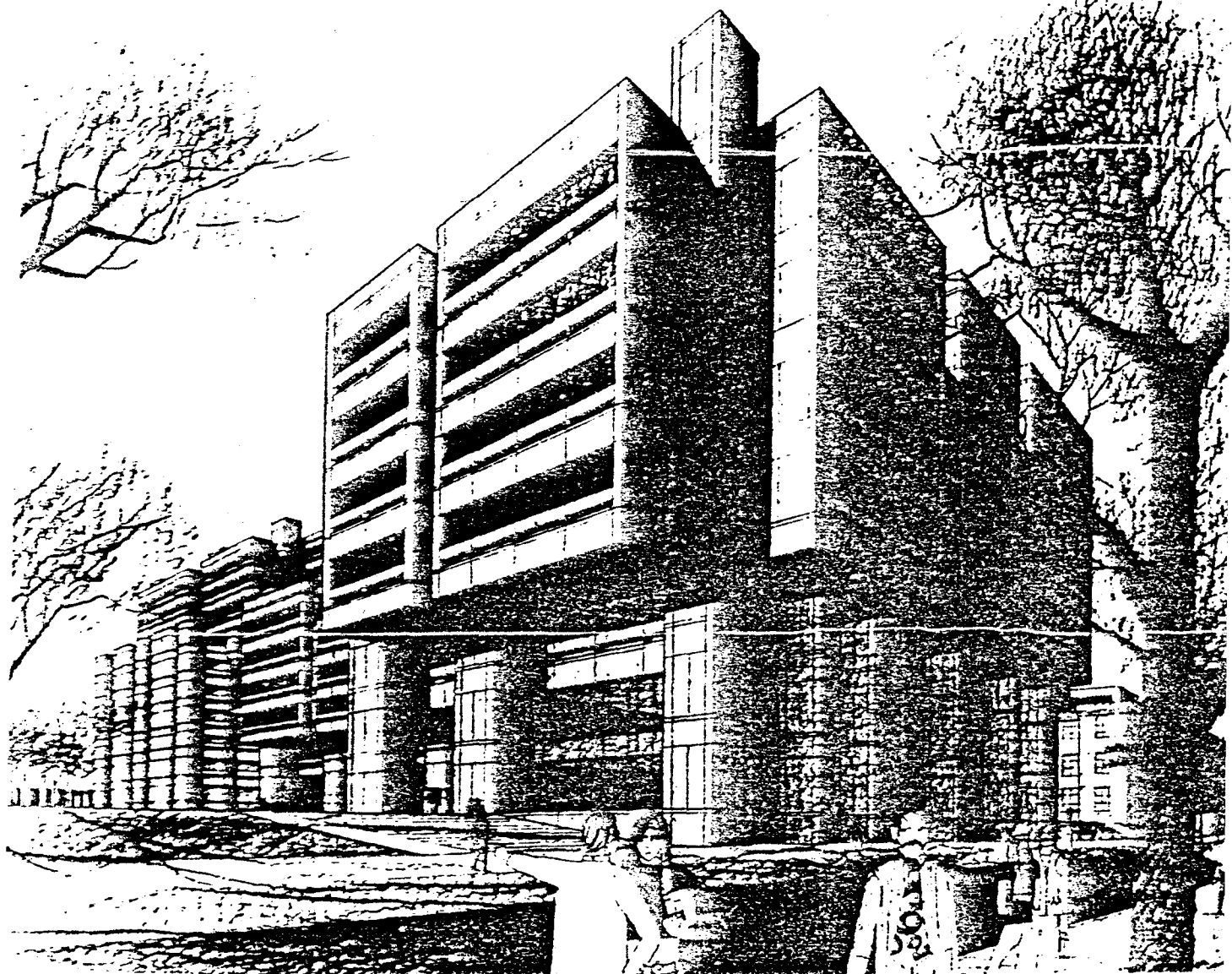
This floor houses faculty and graduate space for the clinical staff and Pharm. D. students within the College of Pharmacy. The remainder of the floor is for the School of Nursing.

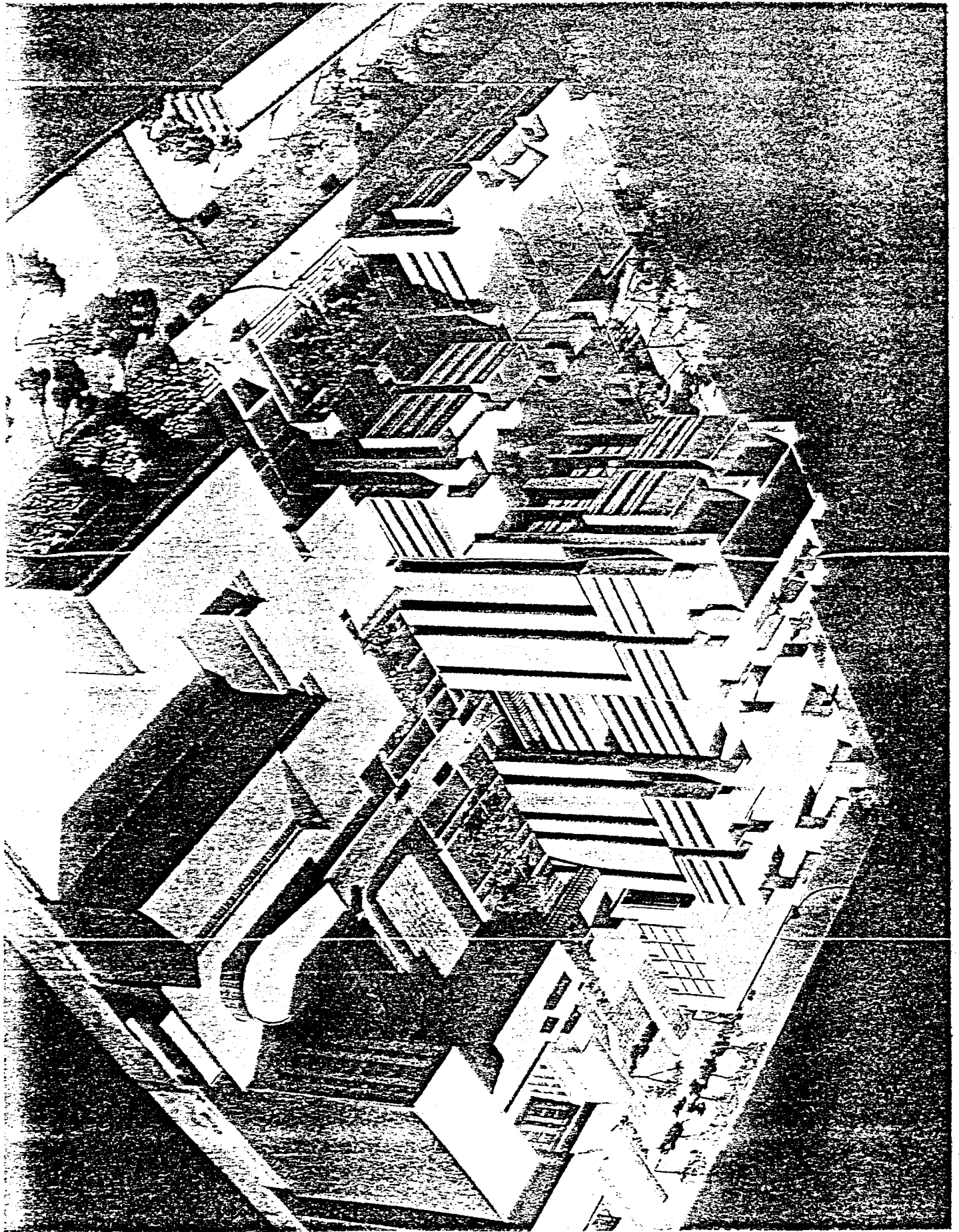
#### Floor 9

School of Nursing.

#### Floor 10

Greenhouse facilities for the College of Pharmacy are located on this level so as to permit the best possible exposure to natural light. The remainder of the space on Floor 10 will be occupied by Mechanical Equipment.





D. Space Summary

SPACE SUMMARY BY FLOOR

BUILDING UNIT F	ASSOC SQ FT BY FLOOR	ASSIGNED SQ FT BY FLOOR	NSF BY FLOOR	UNASS SQ FT BY FLOOR	SEC BY FLOOR
Basement			0	14,521	14,521
Floor 1	2,964	11,425	14,389	7,709	22,098
Floor 2	9,341	9,643	18,984	2,698	21,682
Floor 3	2,244	9,944	12,188	3,641	15,829
Floor 4	1,365	10,652	12,017	4,311	16,328
Floor 5	3,708	11,373	15,081	3,650	18,731
Floor 6	3,513	15,211	18,724	4,166	22,890
Floor 7	3,507	14,438	17,945	4,945	22,890
Floor 8	3,665	14,773	18,438	4,452	22,890
Floor 9	5,565	13,146	18,711	4,179	22,890
Floor 10	5,776	979	6,755	5,535	12,290
TOTAL	41,648	111,584	153,232	59,807	213,039



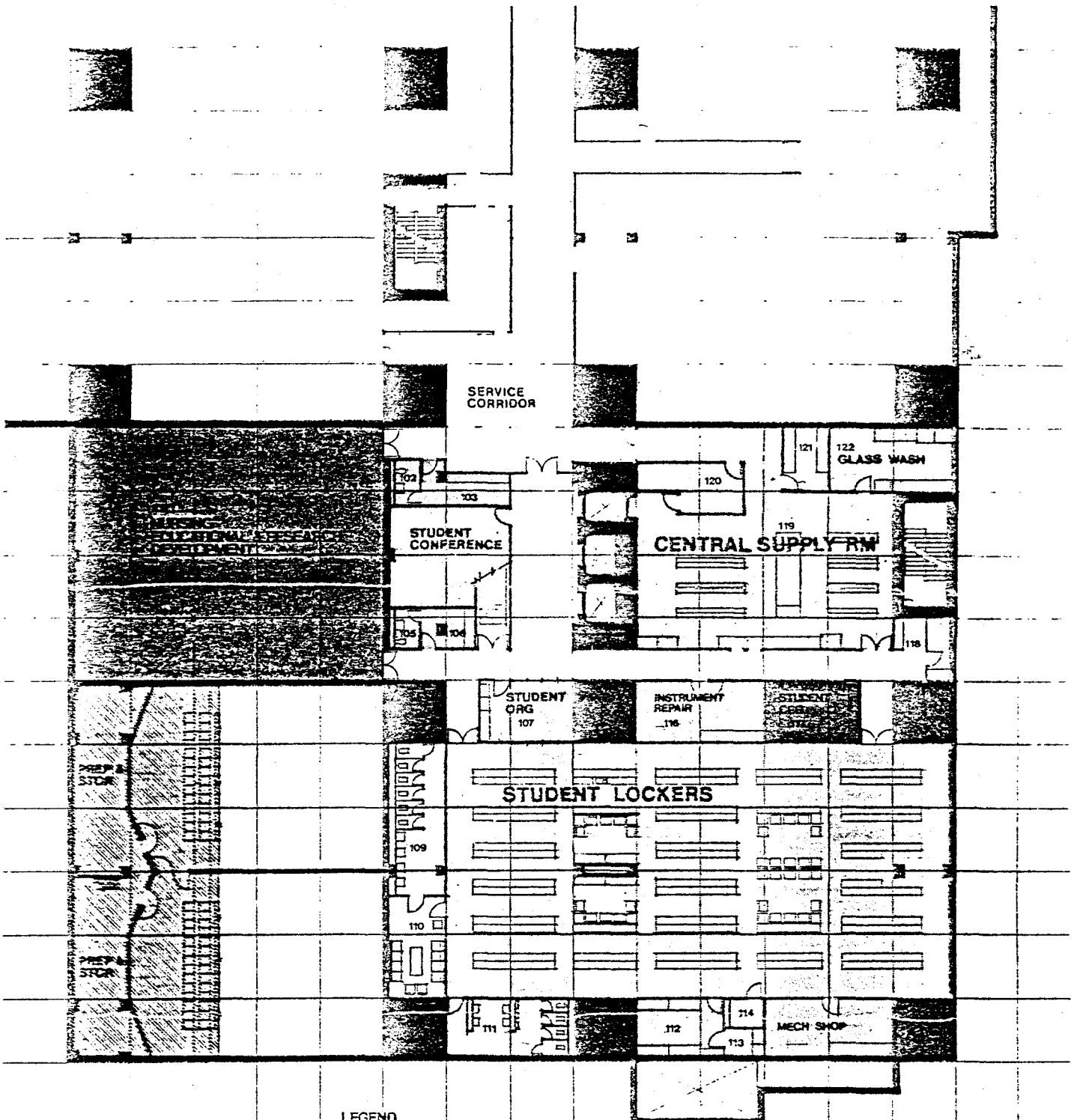
Breakdown of space by Function:

	<u>Pharmacy</u>	<u>Nursing</u>	<u>H.S. Shared</u>
Floor 1	0	2,991	8,434
Floor 2	4,153	0	5,490
Floor 3	9,057	0	887
Floor 4	0	10,652	0
Floor 5	10,611	0	762
Floor 6	15,211	0	0
Floor 7	11,690	578	2,170
Floor 8	4,683	10,090	0
Floor 9	0	13,146	0
Floor 10	<u>979</u>	<u>0</u>	<u>0</u>
TOTALS	56,384	37,457	17,743

Floor I Unit F

ROOM NUMBER	ROOM ASSIGNMENT	ROOM NAME	SPN PER ROOM	TOTAL ASSOC	TOTAL UNASS	TOTAL SPN	TOTAL SFG
F1-99		Corridor		1506			
101	N	Nursing Educ. & Research Dev.	2991				
102		Toilet		40			
103		Locker		102			
104	HSS	Student Conf.	583				
105		Toilet		40			
106		Locker		80			
107	HSS	Student Org.	226				
108	HSS	Student Lock	4818				
109		W-Toilet		289			
110		W-Lounge		220			
111		M-Toilet		268			
112		Storage		191			
113		Janitor		38			
114		Toilet (Handicapped)		51			
115	HSS	Mech. Shop	275				
116	HSS	Inst. Repair	304				
117	HSS	Student Org.	226				
118		Janitor		139			
119	HSS	Cent. Supply	1464				
120	HSS	Trash Rm.	180				
121	HSS	Solvent Stor.	90				
122	HSS	Glass Wash	268				
		TOTAL	11,425	2,964	7,709	14,389	22,098

P - College of Pharmacy  
 N - School of Nursing  
 HSS - Health Sciences Shared Space (Applicant space)



NSF 14,389  
 SFG 22,098  
 NURSING 5,144  
 PHARMACY 6,231

**LEGEND**  
 [Hatched Box] STATE FUNDED AREA  
 [White Box] PHARMACY  
 [Dotted Box] NURSING

TAC

COLLEGE OF PHARMACY & SCHOOL OF NURSING  
 UNIVERSITY OF MINNESOTA  
 HEALTH SCIENCES EXPANSION

PROGRAM UNITS

SHARED FACILITIES

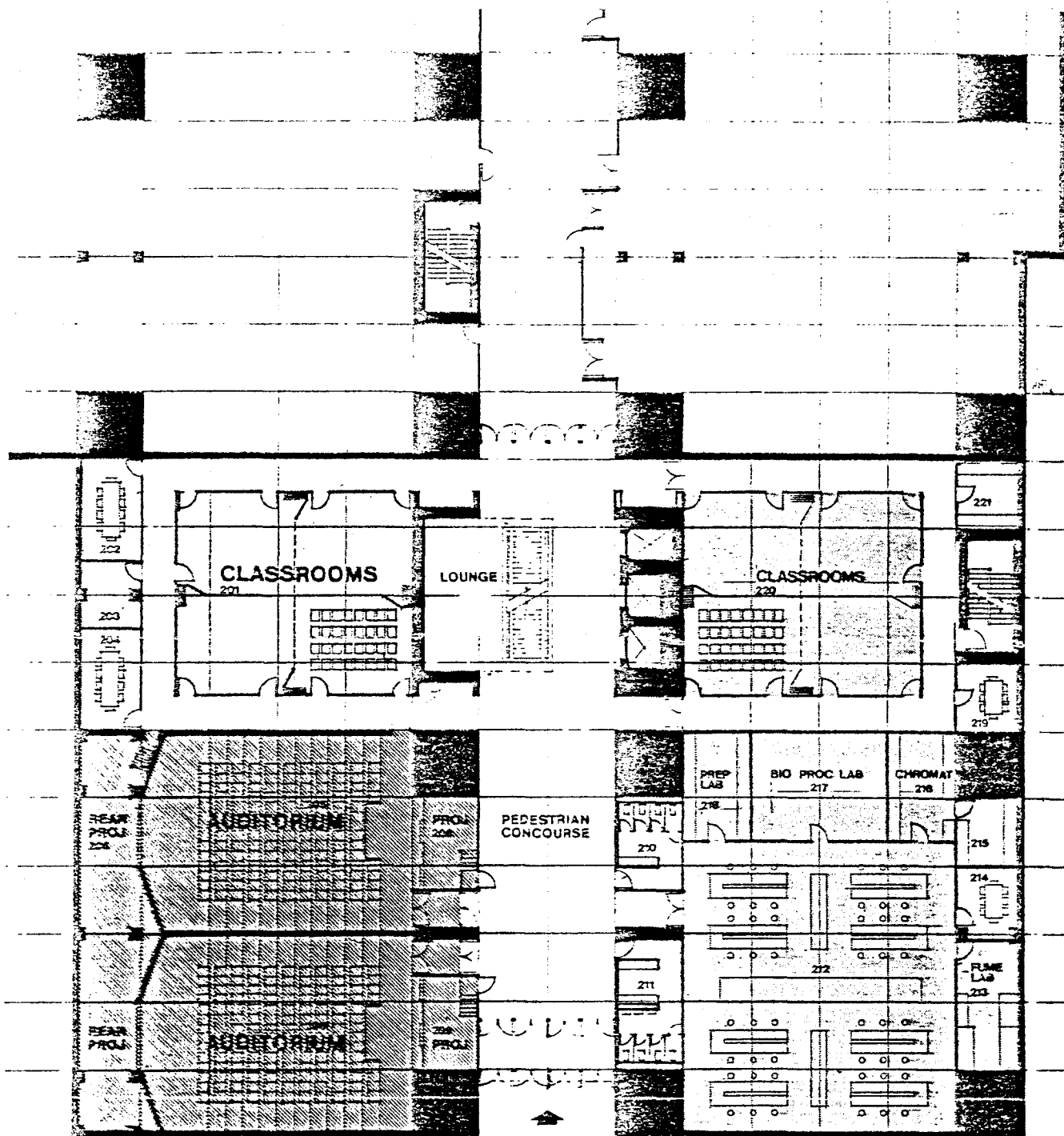
FLOOR

1

Floor 2 Unit F

ROOM NUMBER	ROOM ASSIGNMENT	ROOM NAME	SFN PER ROOM	TOTAL ASSOC	TOTAL UNASS	TOTAL SFN	TOTAL STG	STATE FUNDED
F2-99		Corridors		4945				
201		Classroom		1596				
202		Conf.		208				
203		Storage		140				
204		Conf.		208				
205	HSS	Auditorium						2100
206	HSS	Rear Proj. Room						365
206A	HSS	Rear Proj. Room						365
207	HSS	Auditorium						2100
208	HSS	Proj.						210
209	HSS	Proj.						210
210		W-Toilet		210				
211		Men's Toilet		271				
212	P	Under G. Lab	2619					
213	P	Fume Lab	267					
214	HSS	Conf.	140					
215	P	Inst. Repair	140					
216	P	Chromat	247					
217	P	Bio Proc Lab	493					
218	P	Prep Lab	247					
219		Conf.		140				
220		Classroom		1596				
221	P	Inst. Lab	140					
		TOTAL	4,293	9,341	2,698	18,984	21,682	5,350

P - College of Pharmacy  
 N - School of Nursing  
 HSS - Health Sciences Shared Space (Applicant space)



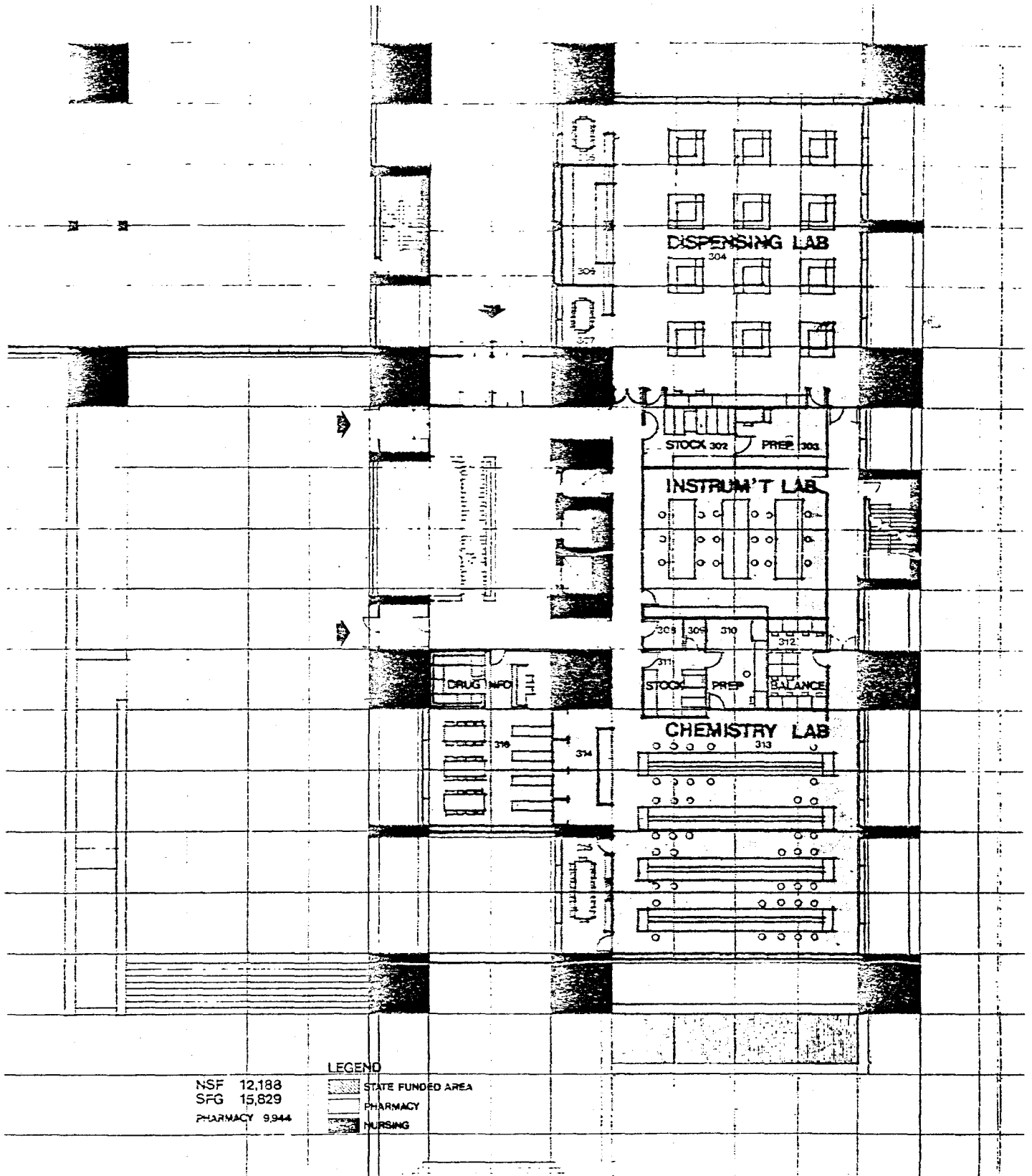
LEGEND	
NSF 18,984	STATE FUNDED AREA
SFG 21,682	PHARMACY
PHARMACY 4,293	NURSING
STATE 5,350	

TAC	COLLEGE OF PHARMACY & SCHOOL OF NURSING	PROGRAM UNITS	FLOOR
	UNIVERSITY OF MINNESOTA	PHARMACY UNDER GRAD LAB	2
HEALTH SCIENCES EXPANSION			

Floor 3 Unit F

ROOM NUMBER	ROOM ASSIGNMENT	ROOM NAME	SFN PER ROOM	TOTAL ASSOC	TOTAL UNASS	TOTAL SFN	TOTAL SFG
F3-99		Corridor		2194			
301	P	Instrument Lab	1170				
302	P	Stock	226				
303	P	Prep	226				
304	P	Dispensing Lab	3176				
305	P	Conf.	127				
306	P	Drug Display	225				
307	P	Conf.	127				
308		Janitor Clo.		50			
309	P	Storage	28				
310	P	Prep Lab	226				
311	P	Stock	172				
312	P	Balance	226				
313	P	Chemistry Lab	2568				
314	P	Fume Lab	304				
315	P	Conf.	256				
316	HSS	Drug Info	887				
		TOTAL	9,944	2,244	3,641	12,188	15,829

P - College of Pharmacy  
 N - School of Nursing  
 HSS - Health Sciences Shared Space (Applicant space)



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COLLEGE OF PHARMACY & SCHOOL OF NURSING  
 UNIVERSITY OF MINNESOTA  
 HEALTH SCIENCES EXPANSION

PROGRAM UNITS

SHARED FACILITIES  
 PHARMACY UNDER GRANT LABS

FLOOR

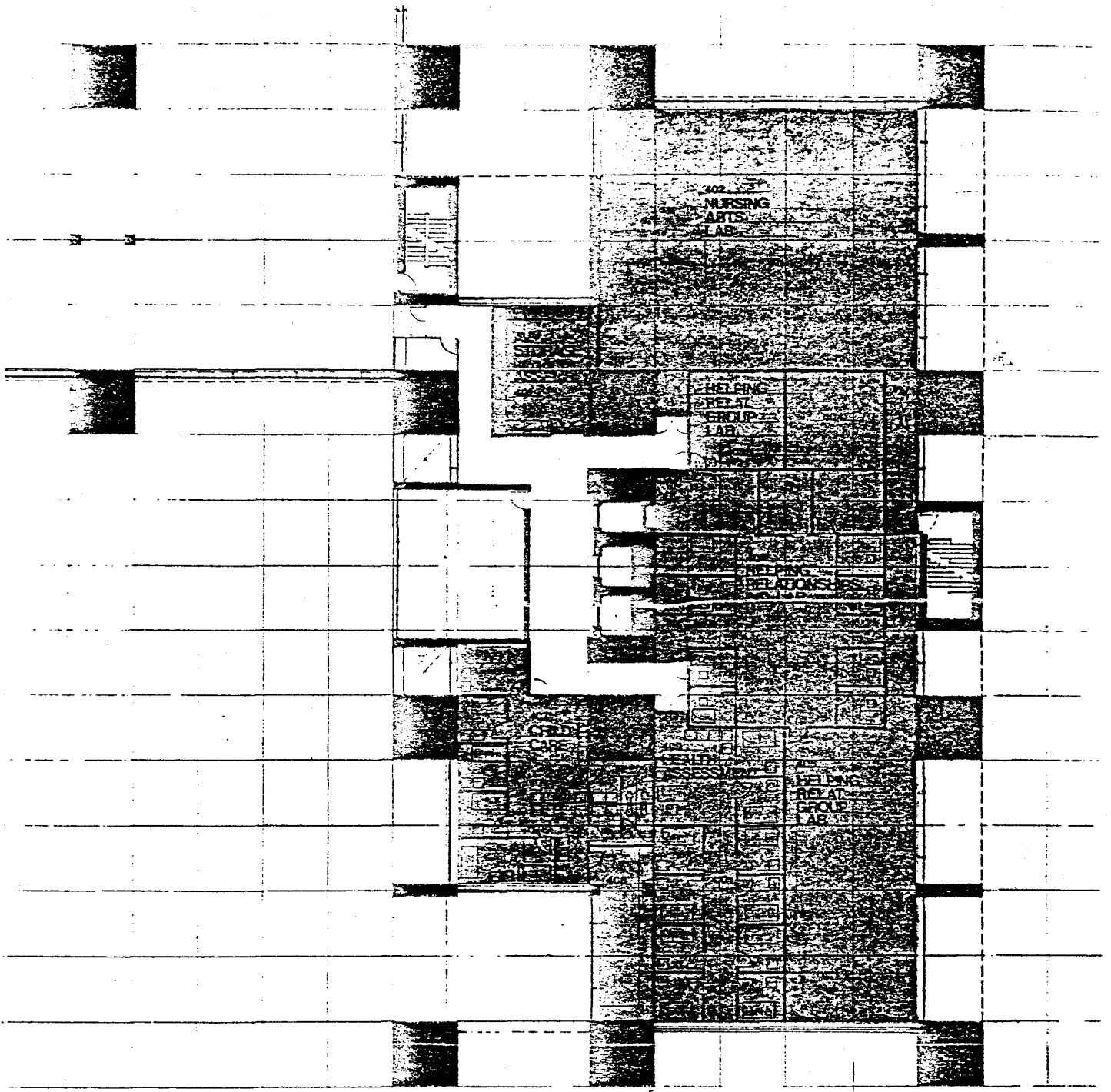
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Floor 4 Unit F

ROOM NUMBER	ROOM ASSIGNMENT	ROOM NAME	SFN PER ROOM	TOTAL ASSOC	TOTAL UNASS	TOTAL SFN	TOTAL SFG
F4-99		Corridor		1365			
401	N	AV Storage & Assembly	350				
402	N	Nursing Skills Lab	3302				
403	N	Helping Relation Group Lab	300				
404	N	Helping Relation Group Lab	300				
405	N	Helping Relation Group Lab	1200				
406	N	Helping Relation Ind Lab	2600				
407	N	Children's Observ. Lab	1000				
408	N	Children Lab	200				
409	N	Health Assessments Lab Tea.	200				
410	N	Health Assessments Lab	1200				
		TOTAL	10,652	1,365	4,311	12,017	16,328




P - College of Pharmacy  
 N - School of Nursing  
 HSS - Health Sciences Shared Space (Applicant space)





NSF 12,017  
 SFG 16,328  
 NURSING 10,852

LEGEND

-  STATE FUNDED AREA
-  PHARMACY
-  NURSING

TAC

COLLEGE OF PHARMACY & SCHOOL OF NURSING  
 UNIVERSITY OF MINNESOTA  
 HEALTH SCIENCES EXPANSION

PROGRAM UNITS

NURSING

FLOOR

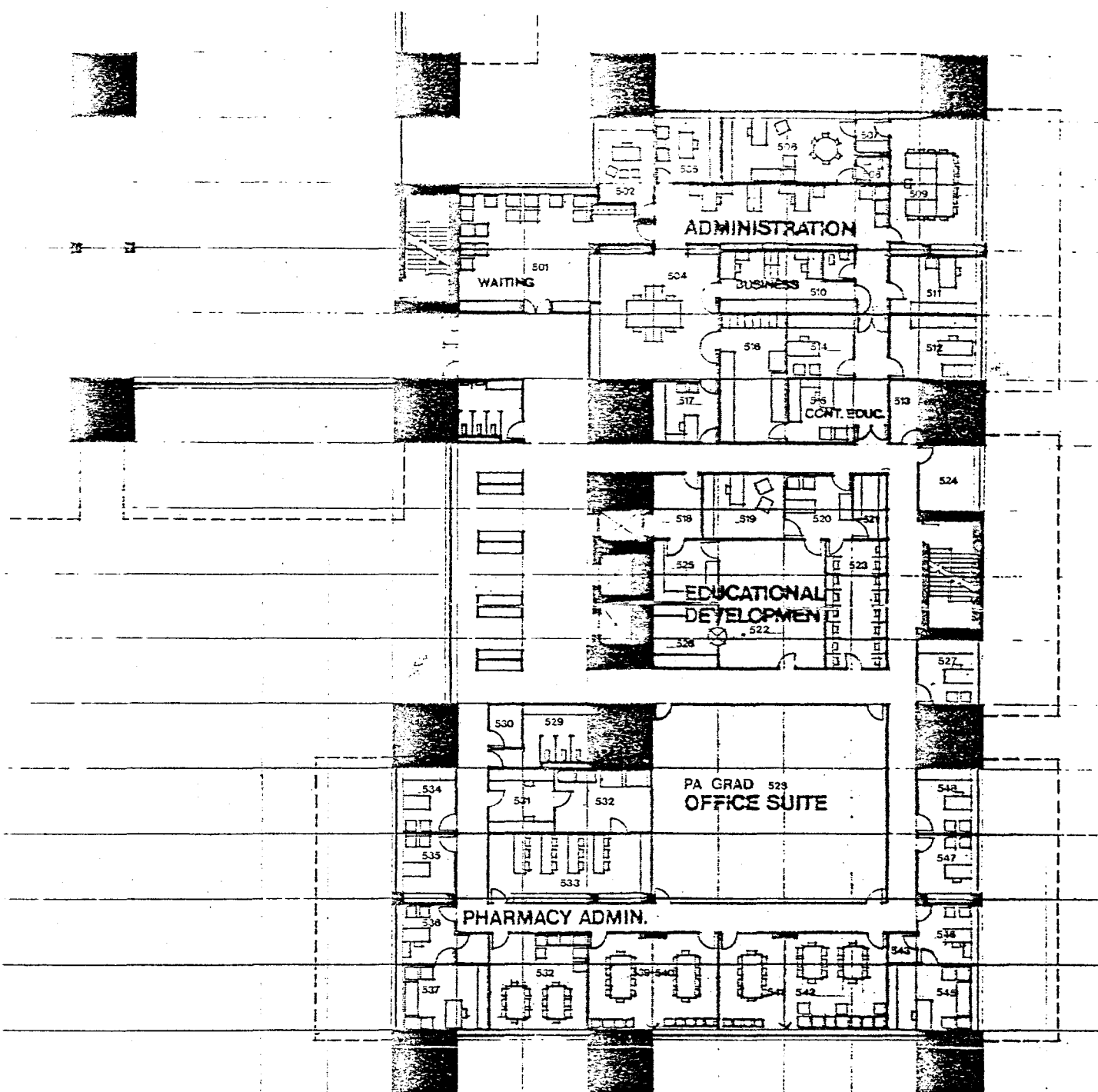
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Floor 5 Unit F

ROOM NUMBER	ROOM ASSIGNMENT	ROOM NAME	SFN PER ROOM	TOTAL ASSOC	TOTAL UNASS	TOTAL SFN	TOTAL SFG
F5-99		Corridor		3336			
501	P	Waiting	598				
501A		W-Toilet		152			
502	P	Ass. Dean	168				
503	P	Administration Office	532				
504	P	Joint Offices	578				
505	P	Ass. Dean	152				
506	P	Dean	304				
507	P	Prep Room	40				
508	P	Private Toilet	36				
509	P	Conf	430				
510	P	Business Office	304				
511	P	Office	228				
512	P	Office	228				
513	P	Storage	76				
514	P	Office	152				
515	P	Cont. Educ.	152				
516	P	Supplies	304				
517	P	Office	152				
518	P	Storage	110				
519	P	Office	191				
520	P	Office	152				
521	P	Storage	78				
522	HSS	Shared Office Space	426				
523	HSS	Classroom	336				
524	P	Storage	152				
525	P	Storage	152				
526	P	Inst. Room	152				
527	P	Office	127				
528	P	PA. Grad Office Suite	1810				

529		W-Toilet		168				
530		Janitor		52				
531	P	Inst. Storage	152					
532	P	Inst. Repair	226					
533	P	Inst. Room	339					
534	P	Office	127					
535	P	Office	130					
536	P	Office	117					
537	P	Office	201					
538	P	Conf.	320					
539	P	Conf.	226					
540	P	Conf.	226					
541	P	Conf.	226					
542	P	Conf.	320					
543	P	Storage	36					
544	P	Office	226					
545	P	Office	127					
546	P	Office	127					
547	P	Office	127					
		TOTAL	11,373	3,708	3,650	15,081	18,731	

P - College of Pharmacy  
 N - School of Nursing  
 HSS - Health Sciences Shared Space (Applicant space)



**LEGEND**

- NSF 15,061
- SFG 18,731
- PHARMACY 11,375
- STATE FUNDED AREA
- PHARMACY
- NURSING

TAC

COLLEGE OF PHARMACY & SCHOOL OF NURSING  
UNIVERSITY OF MINNESOTA  
HEALTH SCIENCES EXPANSION

PROGRAM UNITS

PHARMACY

FLOOR

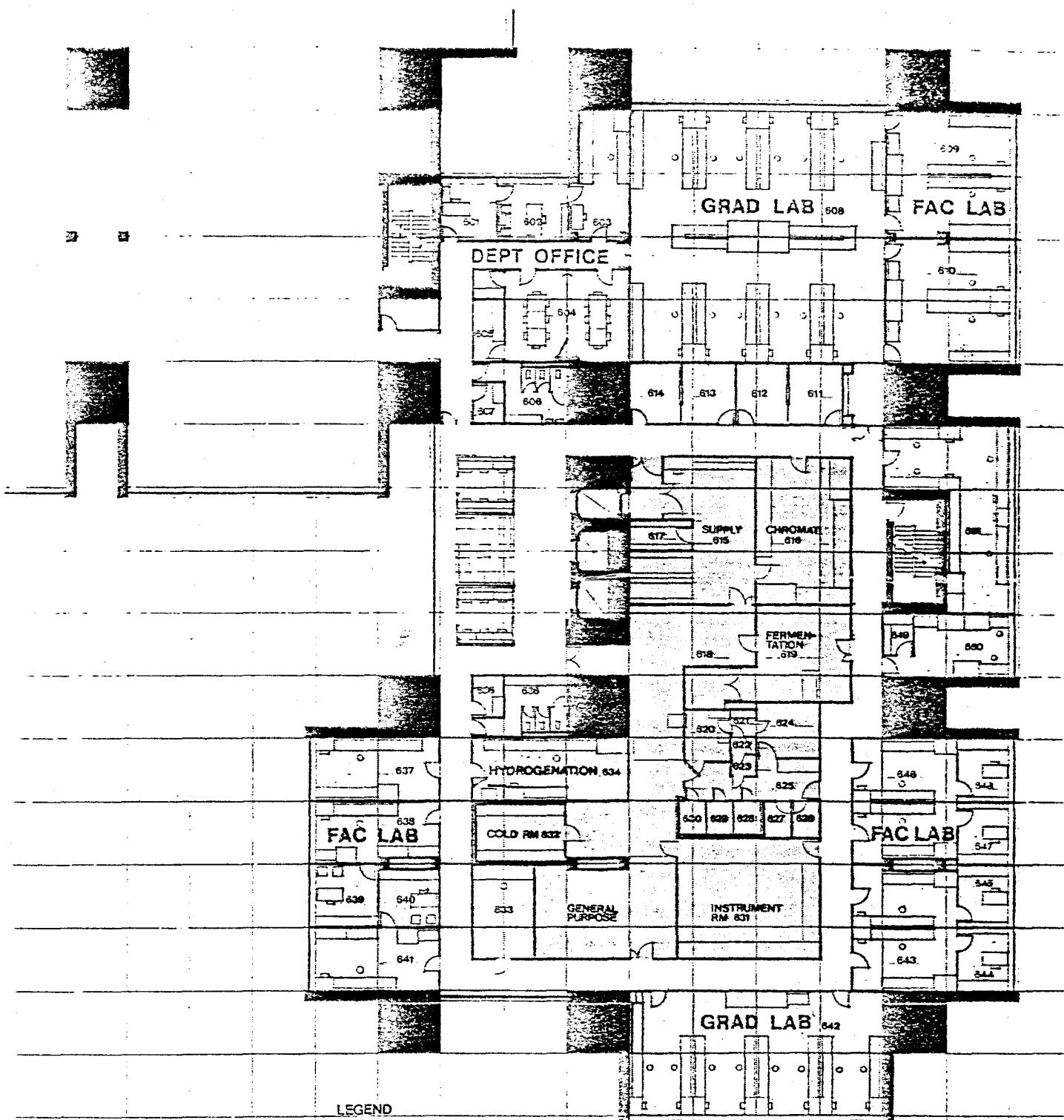
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Floor 6 Unit F

ROOM NUMBER	ROOM ASSIGNMENT	ROOM NAME	SFN PER ROOM	TOTAL ASSOC	TOTAL UNASS	TOTAL SFN	TOTAL SFG
F6-99		Corridor		3065			
601	P	Sec	110				
602	P	Dept Head	144				
603	P	Dept Head Lab	278				
604	P	Conf	452				
605	P	AV. Storage	74				
605A	P	Kitchen	36				
606		M-Toilet			176		
607		Jan.			48		
608	P	Grad Lab	2608				
609	P	Fac Office	608				
610	P	Fac Lab	608				
611	P	Faculty Office	124				
612	P	Faculty Office	124				
613	P	Faculty Office	124				
614	P	Faculty Office	124				
615	P	Supply	553				
616	P	Chromat	541				
617	P	Storage	74				
618	P	Gen Purpose Lab	1174				
619	P	Fermentation	348				
619A	P	Sterilizer RM	64				
620	P	Clean Rm	90				
621	P	Lam Flow Rm	25				
622	P	Shower	25				
623	P	Locker Rm	25				
624	P	Transfer Rm	135				
625	P	Const Temp	188				
626	P	Micro	41				
627	P	Micro	41				
628	P	E.C.R.	41				

629	P	E.C.R.	41				
630	P	E.C.R.	41				
631	P	Instrument	662				
632	P	Cold Rm	226				
633	P	Grad Lab	226				
634	P	Hydrogenation	382				
635		W-Toilet			176		
636		Janitor Clo			48		
637	P	Post Dock Lab	304				
638	P	Fac Lab	304				
639	P	Office	152				
640	P	Office	152				
641	P	Fac Lab	304				
642	P	Grad Lab	1216				
643	P	Fac Lab	501				
644	P	Office	127				
645	P	Office	127				
645	P	Fac Lab	501				
647	P	Office	127				
648	P	Office	127				
649	P	Dark Rm	48				
650	P	Rad Rm	256				
651	P	Grad Lab	608				
		TOTAL	15,211	3,513	4,166	18,724	22,890

P - College of Pharmacy  
 N - School of Nursing  
 HSS - Health Science Shared Space (Applicant space)



NSF 13,724  
 SFG 22,890  
 PHARMACY 15,271

**LEGEND**  
 [Hatched Box] STATE FUNDED AREA  
 [White Box] PHARMACY  
 [Dark Box] NURSING

<b>TAC</b>	<b>COLLEGE OF PHARMACY &amp; SCHOOL OF NURSING</b> UNIVERSITY OF MINNESOTA HEALTH SCIENCES EXPANSION	<b>PROGRAM UNITS</b> PHARMACY-FACULTY GRADUATE STUDENTS	<b>FLOOR</b> <b>6</b>

Floor 7 Unit F

ROOM NUMBER	ROOM ASSIGNMENT	ROOM NAME	SEFN PER ROOM	TOTAL ASSOC	TOTAL UNASS	TOTAL SEFN	TOTAL SEC
F7-99		Corridor		3059			
701	P	Sec	110				
702	P	Office	144				
703	P	Dept Head Lab	278				
704	P	Kitchen	36				
705	P	AV Storage	74				
706	P	Conf	452				
707	P	Grad Lab	2083				
708	P	Instrument	353				
709	P	Fac Lab	900				
710	P	Office	127				
711	P	Office	127				
712	P	Office	127				
713	P	Office	127				
714		M-Toilet		176			
715		Janitor		48			
716	HSS	Receiving	111				
717	HSS	Animal	106				
718	HSS	Animal	106				
719	HSS	Animal	106				
720	HSS	Animal	94				
721	HSS	Dog Rm	200				
722	HSS	Surgery	242				
723	HSS	Feed Bed	65				
724	HSS	Cold Room	48				
725	HSS	Prep Recovery	144				
726	HSS	Corridor	400				
727	HSS	Storage	106				
728	HSS	Animal	123				
729	HSS	Injection	65				
730	HSS	Animal	131				

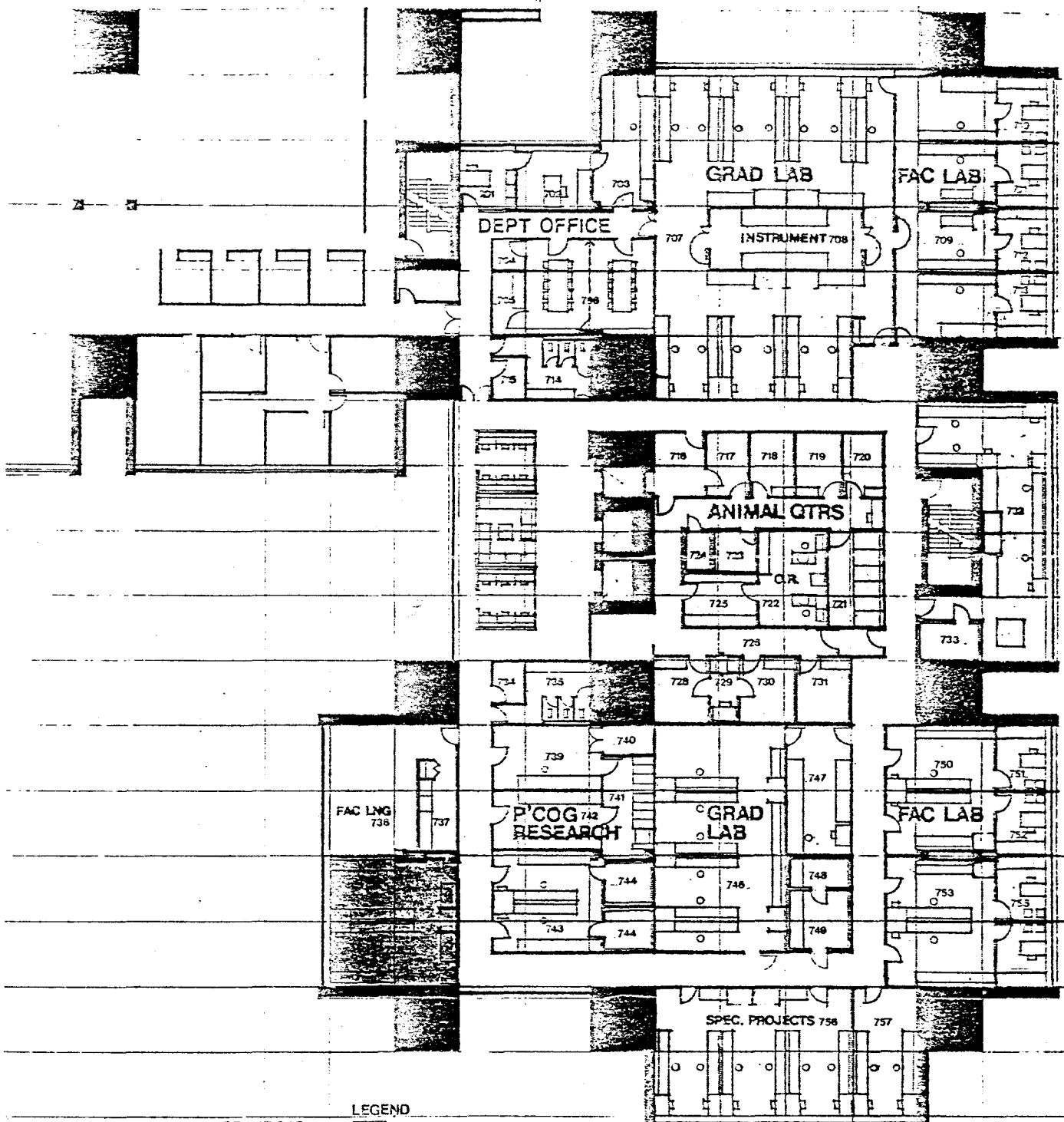


731	HSS	Animal	123				
732	P	Med Chem Grad Lab	710				
733	P	E.C.R.	90				
734		Janitor			48		
735		W-Toilet			176		
736	P	Faculty Lounge	461				
737	P	Vending	127				
738	N	Nursing Lab	578				
739	P	Drying & Milling	254				
740	P	Dust Rm	53				
741	P	Drug Storage	200				
742	P	Extraction Lab	234				
743	P	Post Dock Lab	405				
744	P	Envir Plants	87				
745	P	Envir Plants	80				
746	P	Grad Lab	900				
747	P	Test & Cont	304				
748	P	E.C.R.	73				
749	P	E.C.R.	152				
750	P	Fac Lab	450				
751	P	Fac Office	127				
752	P	Fac Office	127				
753	P	Fac Lab	450				
754	P	Office	127				
755	P	Office	127				
756	P	Spec Prov Lab	910				
757	P	C.P. Office Lab	304				
		TOTAL	14,438	3,507	4,945	17,945	22,890

P - College of Pharmacy

N - School of Nursing

HSS - Health Science Shared Space (Applicant space)



NSF 17,945  
 SFG 22,890  
 PHARMACY 578  
 NURSING 13,860

**LEGEND**

- STATE FUNDED AREA
- PHARMACY
- NURSING

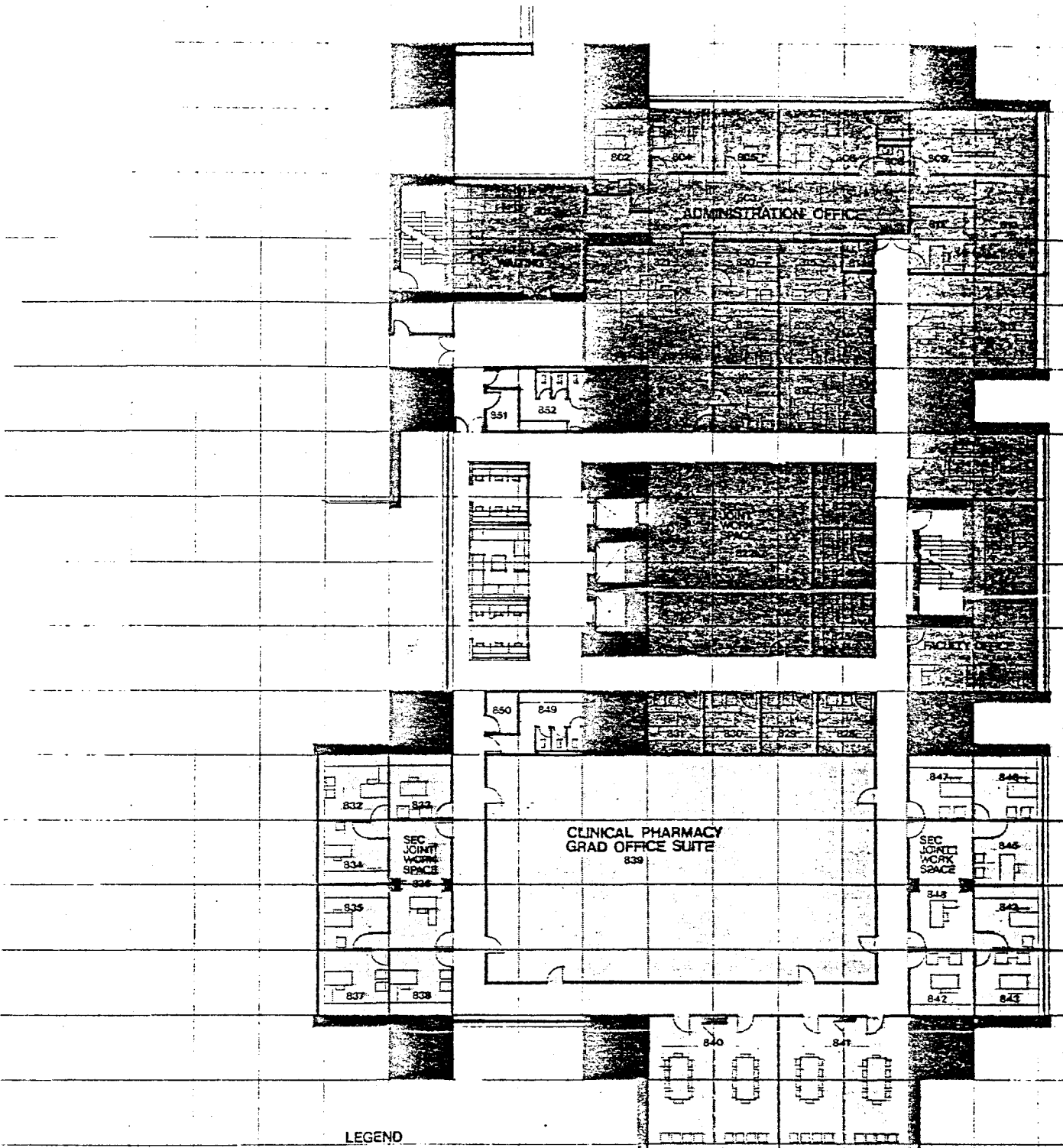
<b>TAC</b>	<b>COLLEGE OF PHARMACY &amp; SCHOOL OF NURSING</b> UNIVERSITY OF MINNESOTA HEALTH SCIENCES EXPANSION	<b>PROGRAM UNITS:</b> SHARED FACILITIES: PHARMACY FACULTY GRADUATE STUDENTS	<b>FLOOR</b> <b>7</b>
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

Floor 8 Unit F

ROOM NUMBER	ROOM ASSIGNMENT	ROOM NAME	SFN PER ROOM	TOTAL ASSOC	TOTAL UNASS	TOTAL SFN	TOTAL SFC
F8-99		Corridor		3217			
801	N	Waiting	608				
802	N	Ass Dean	152				
803	N	Administration Office	608				
804	N	Ass Dean	152				
805	N	Assoc Dean	152				
806	N	Dean	226				
807	N	Conference Prep Area	36				
808	N	Staff Toilet	36				
809	N	Conf	304				
810	N	Shared Office	227				
811	N	Office	152				
812	N	Shared Office	227				
813	N	Office	152				
814	N	Staff Toilet	36				
815	N	Machine Rm, Duplicating	191				
816	N	Work Room	227				
817	N	Shared Office	227				
818	N	Office	142				
819	N	Office	142				
820	N	Office	142				
821	N	Sec Joint Work	790				
822	N	Sec Joint Work	1139				
823	N	Office	143				
824	N	Office	143				
825	N	Office	143				
826	N	Conf	304				
827	N	Research Support	1549				
828	N	Office	131				
829	N	Office	131				
830	N	Office	131				

831	N	Office	131				
832	N	Office	152				
833	N	Office	152				
834	N	Office	152				
835	N	Office	152				
836	N	Storage space	304				
837	N	Office	152				
838	N	Office	152				
839	P	Clinical Pharm Grad Office Suite	2251				
840	P	Conf	608				
841	P	Conf	608				
842	P	Office	152				
843	P	Office	152				
844	P	Office	152				
845	P	Office	152				
846	P	Office	152				
847	P	Office	152				
848	P	Sec Joint Work Space	304				
849		M-Toilet				176	
850		Janitor Clo.				48	
851		W-Toilet				176	
852		Janitor Clo				48	
		TOTAL	14,823	3,665	4,452	18,434	22,890

P - College of Pharmacy  
 N - School of Nursing  
 HSS - Health Sciences Shared Space (Applicant space)



NSF	18,438		STATE FUNDED AREA
SFG	22,890		PHARMACY
PHARMACY	6,840		NURSING
NURSING	7,933		

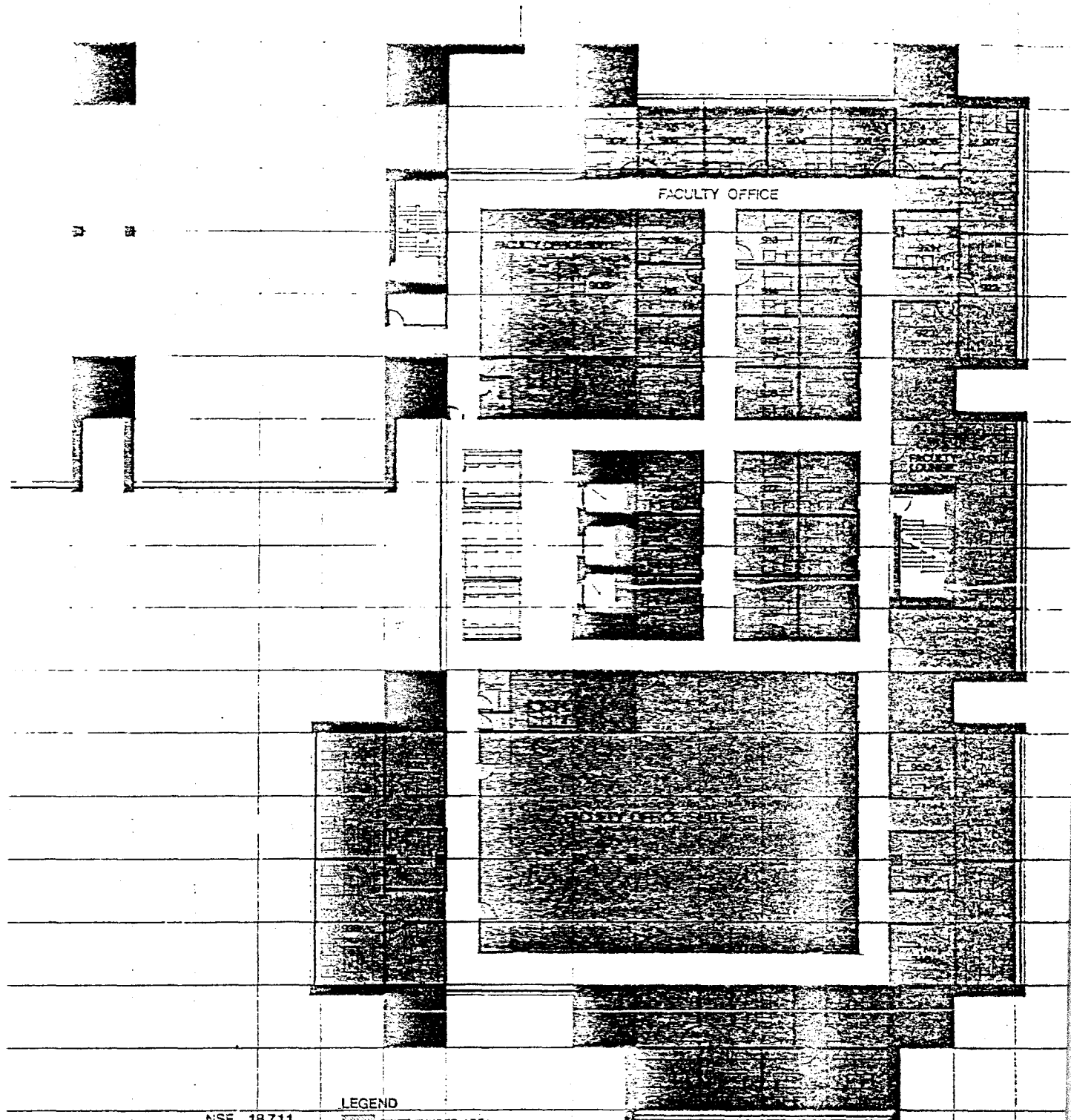
<b>TAC</b>	<b>COLLEGE OF PHARMACY &amp; SCHOOL OF NURSING</b>	<b>PROGRAM UNITS</b>	<b>FLOOR</b>
	UNIVERSITY OF MINNESOTA HEALTH SCIENCES EXPANSION	NURSING CLINICAL PHARMACY	<b>8</b>

Floor 9 Unit F

ROOM NUMBER	ROOM ASSIGNMENT	ROOM NAME	SFN PER ROOM	TOTAL ASSOC	TOTAL UNASS	TOTAL SFN	TOTAL SFG
F9-99		Corridor		5117			
901	N	Fac Office	127				
902	N	Fac Office	152				
903	N	Fac Office	152				
904	N	Fac Office	152				
905	N	Fac Office	152				
906	N	Fac Office	152				
907	N	Shared Office	304				
908	N	Faculty Office Suite	779				
909	N	Fac Office	127				
910	N	Fac Office	127				
911	N	Fac Office	127				
912	N	Fac Office	127				
913	N	Fac Office	127				
914	N	Fac Office	127				
915	N	Fac Office	127				
916	N	Fac Office	127				
917	N	Fac Office	127				
918	N	Fac Office	127				
919	N	Fac Office	127				
920	N	Fac Office	127				
921	N	Fac Office	127				
922	N	Fac Office	304				
923	N	Fac Office	152				
924	N	Fac Office	152				
925	N	Fac Office	152				
926	N	Fac Office	152				
927	N	Fac Office	152				
928	N	Fac Office	152				
929	N	Fac Office	152				
930	N	Fac Office	152				

931	N	Fac Office	152					
932	N	Fac Office	152					
933	N	Conference	608					
934	N	Conf	304					
935	N	Faculty Office Suite	3724					
936	N	Fac Office	152					
937	N	Shared Office	304					
938	N	Shared Office	304					
939	N	Fac Office	152					
940	N	Fac Office	152					
941	N	Fac Office	152					
942	N	Fac Office	152					
943	N	Shared Office	304					
944	N	Shared Office	304					
945	N	Fac Office	152					
946	N	Fac Office	152					
947	N	Shared Office	304					
948	N	Shared Office	304					
949	N	Fac Office	152					
950	N	Fac Office	152					
951		W-Toilet				176		
952		Janitor				48		
953		M-Toilet				176		
954		Janitor				48		
		TOTAL	13,146	5,565	4,179	18,711	22,890	

P - College of Pharmacy  
 N - School of Nursing  
 HSS - Health Sciences Shared Space (Applicant space)



NSF 18,711  
 SFG 22,690  
 NURSING 13,148

**LEGEND**  
 [Cross-hatch pattern] STATE FUNDED AREA  
 [Dotted pattern] PHARMACY  
 [Solid black pattern] NURSING

TAC

COLLEGE OF PHARMACY & SCHOOL OF NURSING  
 UNIVERSITY OF MINNESOTA  
 HEALTH SCIENCES EXPANSION

PROGRAM UNITS  
 NURSING

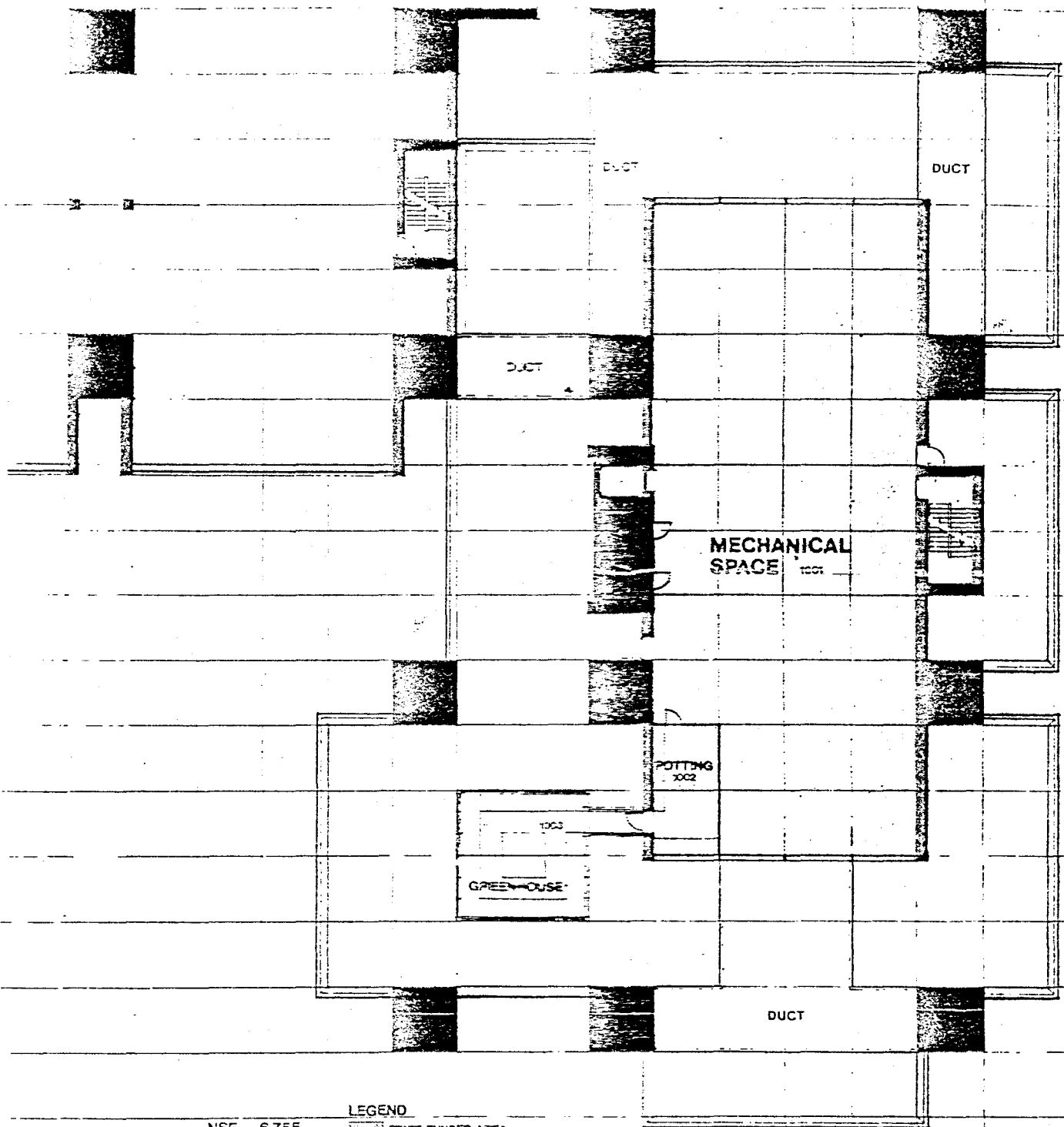
FLOOR  
 9



Floor 10 Hall F




ROOM NUMBER	ROOM ASSIGNMENT	ROOM NAME	SPN PER ROOM	TOTAL ASSOC	TOTAL UNASS	TOTAL SPN	TOTAL SEC
1001		Mechanical Space		5776			
1002	P	Pott Ing	304				
1003	P	Greenhouse	675				
TOTAL			979	5,776	5,535	6,755	12,290

P - College of Pharmacy  
 N - School of Nursing  
 HSS - Health Sciences Shared Space (Applicant space)



NSF 6,755  
 SFG 12,290  
 PHARMACY 979

LEGEND

-  STATE FUNDED AREA
-  PHARMACY
-  NURSING

TAC

COLLEGE OF PHARMACY & SCHOOL OF NURSING  
 UNIVERSITY OF MINNESOTA  
 HEALTH SCIENCES EXPANSION

PROGRAM UNITS

PHARMACY

FLOOR

10

E. Space Utilization Following Completion of the Proposed Project

SUMMARY OF SPACE CONTROLLED BY THE APPLICANT

	Total	New Assignable Square Feet (NASF)		Number of Student Stations	
		Total Utilized	Usable by Program	Total	Usable by Program
Classroom-type instructional space*	0	--	--	--	--
Laboratory-type instructional space	13,210	13,210	13,210	171	171
Library space*	0	--	--	--	--
Auditoriums*	0	--	--	--	--
Administrative Offices and Areas	4,469	4,469	4,469	xxx	xxx
Faculty Offices	5,230	5,230	5,230	xxx	xxx
Research and Research Training Space**	25,817	25,817	25,817	xxx	xxx
Animal Facilities*	0	--	--	xxx	xxx
Other Space	7,658	7,658	7,658		

Total (Exclusive  
of Patient Care Facilities) 56,384 sq.ft.

\* Health Sciences Shared Space

\*\* Includes work space for faculty and graduate students as well  
as specialized research work space (e.g., tissue culture  
transfer areas, chromatography areas, instrument rooms).

Utilization of Instructional Classrooms and Laboratories

Hours per year Spent by a Typical Full  
Time Student in Areas Controlled by the  
Applicant School

	A	B	C
	Total Columns <u>B &amp; C</u>	<u>Classrooms*</u>	<u>Instructional Laboratories</u>
First year undergraduate	288	216	72
Second year undergraduate	684	432	252
Third year undergraduate	432	360	72
Fourth year undergraduate	108	108	0
Fifth year undergraduate	---	---	---
Sixth year undergraduate	---	---	---
Graduate Students enrolled for degree	<u>1110</u>	<u>360</u>	<u>750</u>
 Total.....	2612	1476	1146

Academic Year

	1 & 2	3 & 4
Number of weeks in the Academic Year	35	48
Number of hours in the Academic Week	40	40

\*Including small group classrooms (e.g., conference areas)

A very careful effort has been made to plan and create facilities to satisfy the programs described in Item 9 - Section III, while at the same time providing the flexibility needed to adapt to changing curriculum patterns and to changing professional roles of the pharmacist.

As the curriculum now stands, activity in the proposed facility will basically follow the same guidelines for the pharmaceutical sciences as are now followed in the present facility. Immediate benefits will be noted through increased enrollment capability, an environment in which all health sciences are represented, ability to provide lower student to faculty ratios, the availability of various educational support systems to aid in providing the relevancy and individuality needed in the curriculum, and an easing of current space deficiencies.

Based upon the spring quarter (due to the heaviest lecture schedule), the program for the 5-year curriculum indicates that for the required courses within the College of Pharmacy, 35 lecture hours per week are delivered. A majority of these lecture hours must be provided in the morning between the

hours of 8 a.m. and 12 noon. This is based upon the necessity of having afternoons free for laboratory offerings. These 35 hours will in effect more than take up the possible morning scheduling of the 2 - 150 seat lecture halls. Additional large classroom space, if needed, will be available through Unit A, and reciprocally the Health Sciences and the University will schedule needed time within Unit F. It should be pointed out that no other 150 seat classrooms have been planned for in Phase I construction.

A majority of the conference/seminar rooms have been planned to accommodate joint functions. These functions may include departmental reading rooms, student study areas, lounge areas, or media preparation space. The 35 classroom hours indicated above do not take into account space needed for small group interactions, lecture areas for the Doctor of Pharmacy program, or seminar space. These activities will be assigned space from the conference/seminar rooms and/or from the larger auditoria as necessary.

<u>Floor</u>	<u>Area Designation</u>	<u>Capacity</u>	<u>Average Student Occupancy</u>	<u>Use* (hrs/wk)</u>
2	Classroom	75	50-75	40
2	Classroom	75	50-75	40
2	Auditorium	150	125-150	40
2	Auditorium	150	125-150	40

\*Includes utilization by other health science units.

The following table indicates the laboratory usage for the conventional 5-year curriculum, the Doctor of Pharmacy program, and the Medical Technology program.

	Pharmaceutical Processes Lab	Biological Processes Lab	Chemical Processes Lab
Quarter			
FALL	(xx)(xx)	00 0	(xx) 0
WINTER	(xx)(xx)00	0 (xx)	(xx) 0
SPRING	(xx)(xx)00	0 (xx)	0

KEY: (xx) 5-year program. Two sections for each course.  
0 Doctor of Pharmacy specialization program.

Each letter in the above table represents a laboratory period of from 3 to 4 hours each. Not shown is a designation of the time needed for laboratory preparation and set-up. The proposed scheduling is based on the traditional 'formal' laboratory period. However, it should be kept in mind that the concept of 'open' laboratories where students work at their own pace is gaining rapid acceptance. The existing undergraduate Medicinal Chemistry laboratory is of this type and it is expected that others will follow their example in the near future.

The table also does not show graduate level instructional use of the teaching laboratories. A number of graduate courses in pharmacy will be utilizing this space, especially that found in the biological processes

laboratory which has been designated to accommodate advanced levels of learning in the life sciences.

Based upon the above rationale, the following utilization chart can be made for the undergraduate teaching laboratories.

Floor	Area Designation	Capacity	Average Student Occupancy	Use (Hrs/wk)
2	Biological Processes Undergraduate Lab and related space	48	40-48	40*
3	Chemical processes Undergraduate Lab and related space	75	70-75	40**
3	Pharmaceutical processes Undergraduate Lab and related space	48	40-48	40
5	Calculations Lab (U.G.)	12	12	24

It should be mentioned that the growth of the Doctor of Pharmacy specialization program with its many options will make unknown demands for classroom and laboratory space. This has not been projected beyond the minimal expectations.

\*Including use by graduate students

\*\*Based on an "open-lab" format

In accordance with the policy of placing the greatest emphasis on the individual student, numerous areas within the building (Unit F) and within the other areas of the Health Sciences Center have been designated to complement this individuality. Within Unit F are found student conference rooms, locker rooms, laboratory reference areas, discussion rooms, the drug information center, demonstration and study carrels within the laboratories, and lounge and vending facilities. To aid in the education process, space has also been included for an Educational Development Center, a computer center, and a Continuing Education Administrative suite. In addition, the Health Sciences Center as a whole will provide library and study space, the Learning Resources Center, and lounge space for all health sciences personnel.

## F. Animal Facility Analysis:

Current animal facilities for the College of Pharmacy are located in Appleby Hall. They consist of a complex of four small interconnected rooms, one of which serves as an operating and general work area with the remaining three rooms providing the actual housing. With no Pharmacology offerings in the College itself, no great inadequacies as far as space needs are concerned have been noted in the past. This has relieved the animal needs for both the undergraduate and graduate programs. However, as Biopharmaceutics continues to expand and as a greater emphasis is placed upon biological orientation within all disciplines, a greater need for space and improved facilities has ensued; again involving both the undergraduate and the graduate programs.

In regard to the status of animal quarters serving the remainder of the Health Sciences -- these are currently located in the research areas of seven different buildings of the medical complex. Approximately 50% of the animals at this institution are cared for by personnel of the departments using the animals. The remainder of the animals are under the care of the personnel of the Research Animal Hospital. The School of Dentistry is providing approximately 6000 square feet of space on the 19th level of Unit A for their needs, while major expansion for the Research Animal Hospital will be provided for through Unit B/C.

Although a close working relationship will be developed between Pharmacy and the remainder of the health sciences in regard to animal needs, a certain amount of space will be necessary for housing animals under experimentation. The School of Nursing (which has need for minimal animal space) will share these facilities and the space is considered as being health sciences shared space.

No facilities for breeding and raising our own animals are planned. All animals will be ordered as needed either direct from involved companies or through the Research Animal Hospital. Housing, therefore, will be minimal except in cases of prolonged experimentation.

The lay-out will allow for separation of all animal species (seven small rooms plus a dog room) and will also allow for maximum flexibility with regard to possible variations in program. The separation of species, along with refuse isolation, feed isolation, separate receiving area, surgery area, recovery area, and the availability of a room for quarantine and isolation, will minimize the possibility of disease outbreaks and resulting contamination problems.

Facilities for the cleaning and sterilization of individual small cages will be made available within the cleaning and equipment room. The bulk of the cage washing (i.e., large cages and racks of cages) and general upkeep of the animals and their quarters however, will be provided through cooperation with the Research Animal Hospital. The Animal room complex will have direct service elevator connection with the service corridor on level 1 which leads to the Research Animal Hospital facilities. This is a service corridor and as such does not provide public access.

Animal deliveries to the Research Animal Hospital are made via a separate service dock, the access of which is through the Mayo underground garage. Distribution throughout the Health Sciences complex will then be carried out from this point. Small animal purchases are normally direct through

central stores while the purchase of all other animals will be coordinated by the Research Animal Hospital.

Animal health care provisions are available also through the Research Animal Hospital in conjunction with the College of Veterinary Medicine's holding facilities.

Daily carcass and refuse disposal will be provided by the University. The separate refuse storage area will have refrigeration for such storage needed until the time of pick-up and disposal. The refuse will be adequately bagged within the refuse storage area and at the time of disposal will be brought to the service corridor on level 1 via the service elevator.

It is recognized that the main problem arising out of the University's organization regarding research animals is that of dealing with animal transportation. It is for this reason that a separate isolated service corridor horizontally connecting all Health Sciences units at level 1 was established. Vertical movement in other units which have a high degree of animal traffic is accommodated by a separate animal service elevator. Unit F, by comparison, has a relatively low degree of animal traffic contemplated at this time and, therefore, it was felt a combination passenger-freight elevator would be satisfactory. Detailed analysis of both passenger and service movement, their volumes, frequencies, etc. has not been undertaken. Numerous possibilities exist and will be considered in terms of isolating animal movement by using various control techniques to complete isolation of elevator and shaftway. The full range of these alternatives will be examined concurrent with a detailed analysis of materials movement.

The placement of the animal facilities on the 7th floor of our proposed facility is based upon the premise that high density use facilities be situated on the more readily accessible lower levels while functions that require low level continuous activity be placed within the upper levels. Resultingly, classrooms, undergraduate laboratories, student facilities, and supply functions have been placed on the lower levels of Unit F. Supportive reasoning for placing the animal room complex on an upper level comes through the definition of the primary user. Biopharmaceutics, as well as other biologically oriented segments of our graduate program comprise this user group. All of these segments are on floors 6 and 7 of Unit F and Biopharmaceutics itself is on the same level as the animal room complex.

The minimal animal holding and experimentation facilities we are proposing are in line with completely centralized or coordinated University or Health Sciences animal facilities.

We are seeking cooperation in this area to eliminate duplication of facilities and in being able to provide the best possible care for the animals being housed.



### G. Future Expansion

Future expansion of the Health Sciences Center beyond Phase I is indicated in the master campus plan (Part IV of this Section).

The College of Pharmacy has no future phased projects under consideration.

Unit F has been planned so that all floors can be expanded laterally one bay (approximately 62 feet) to the east. This will allow a potential increase of approximately 40% gross square feet at some future time if deemed necessary.

#### IV. Master Campus Plan

The University of Minnesota Health Sciences Expansion provides facilities for the consolidated units of the Health Sciences: School of Medicine, University Hospitals, School of Dentistry, School of Public Health, School of Nursing and the College of Pharmacy.

The complex of new and remodeled existing buildings comprising the Health Sciences Facilities is the architects' response to the University's goal of physical and curricular integration of the Health Sciences units with each other and the rest of the Minneapolis campus of the University.

The problem as defined by this goal was to develop a high density building system on a tight urban site with strong relationships to major existing facilities. This system needed to respond to the initial phase of expansion as well as to the continuing need for growth and change inherent in health sciences units.

The architects' initial effort was to develop a master plan which provided for short and long term expansion and responded to the integrated relationships called for in the program. This master plan serves as a framework for growth by establishing the major paths of circulation knitting together new and existing buildings. A centralized receiving unit (Unit K/E) is the focus of a separate service circulation network connecting existing buildings and new construction two floors below grade. One floor above that a major pedestrian spine with branches to existing buildings and new construction and in addition, a 3,000 car parking ramp provides the capability of moving to all parts of the Health Sciences without being exposed to the frequently severe weather (see diagram pages). Two floors above grade another enclosed connection is provided permitting access to all Health Sciences areas.

Phase I of the master plan is scheduled to be complete by December 1977. Phase I is comprised of Units A, B/C, K/E and F as shown on the site plan which follows this section.

Unit A, which houses the School of Dentistry, Basic Sciences teaching laboratories, shared Auditoria, and programs from the Schools of Public Health and Medicine has been under construction and Unit B/C is scheduled to be completed by December of 1976. The lower floors of Unit K/E, as previously mentioned, constitute the centralized receiving unit for the Health Sciences. The upper floors house a Cardiovascular Research and Teaching Center. Construction of this unit has been completed.

Unit F, the College of Pharmacy and School of Nursing, which is the subject of this application is currently in the planning stages. Construction is scheduled to begin early in 1976 with completion scheduled for late 1977.

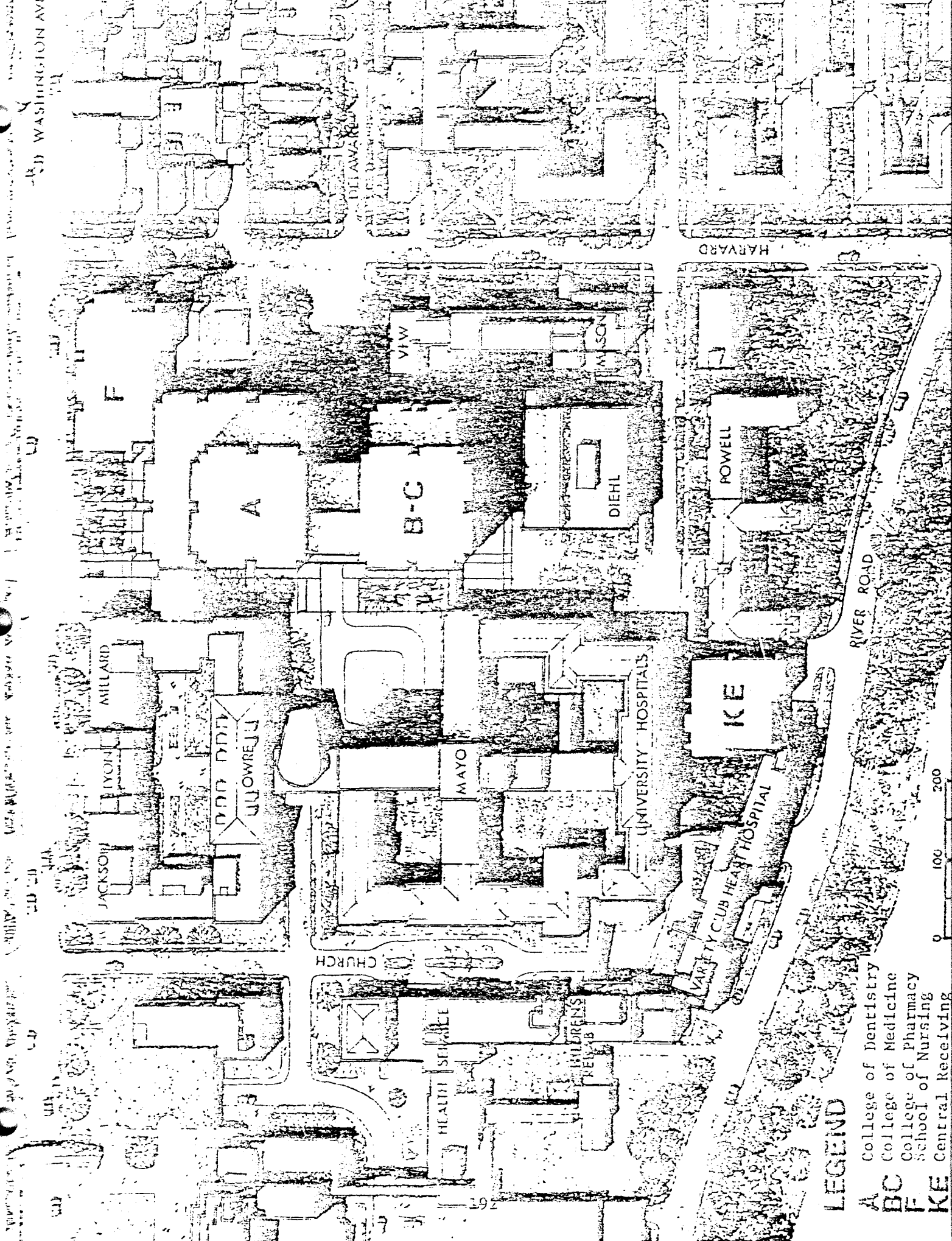
The University has prepared a long-range plan for parking and circulation on the Twin Cities Campus. The Health Sciences facilities program includes provision of a 3,000 car parking ramp which is being constructed simultaneously with the construction of Unit A. This ramp has first priority in the implementation of the overall parking plan. The University is also cooperating with the Metropolitan Transit Commission and other agencies to develop improved public transportation for the area. Among the possibilities being considered is a series of satellite parking lots connected to the University by a rapid transit system. Within the past year a system of express bus routes was initiated jointly between the University and the Metropolitan Transit Commission.

A long range plan for housing is now in preparation and although a high proportion of student and staff housing will, of necessity, be provided by the private sector, it is likely that plans will include some University owned apartments or town houses in the vicinity of the Health Sciences facilities. A low cost housing development is about to be constructed on University land 1 1/2 miles west of the Health Sciences facilities.

Foreseeable expansion of the Health Sciences beyond the Phase I planned program for completion in 1976 includes: new facilities for the School of Public Health, Unit G; and a new hospital, Units J and H, to replace beds now located in the existing Mayo Building. Space vacated by these beds and other hospital functions will be remodeled and used for expansion in the areas of clinical teaching and research, student study spaces, faculty and administrative offices.



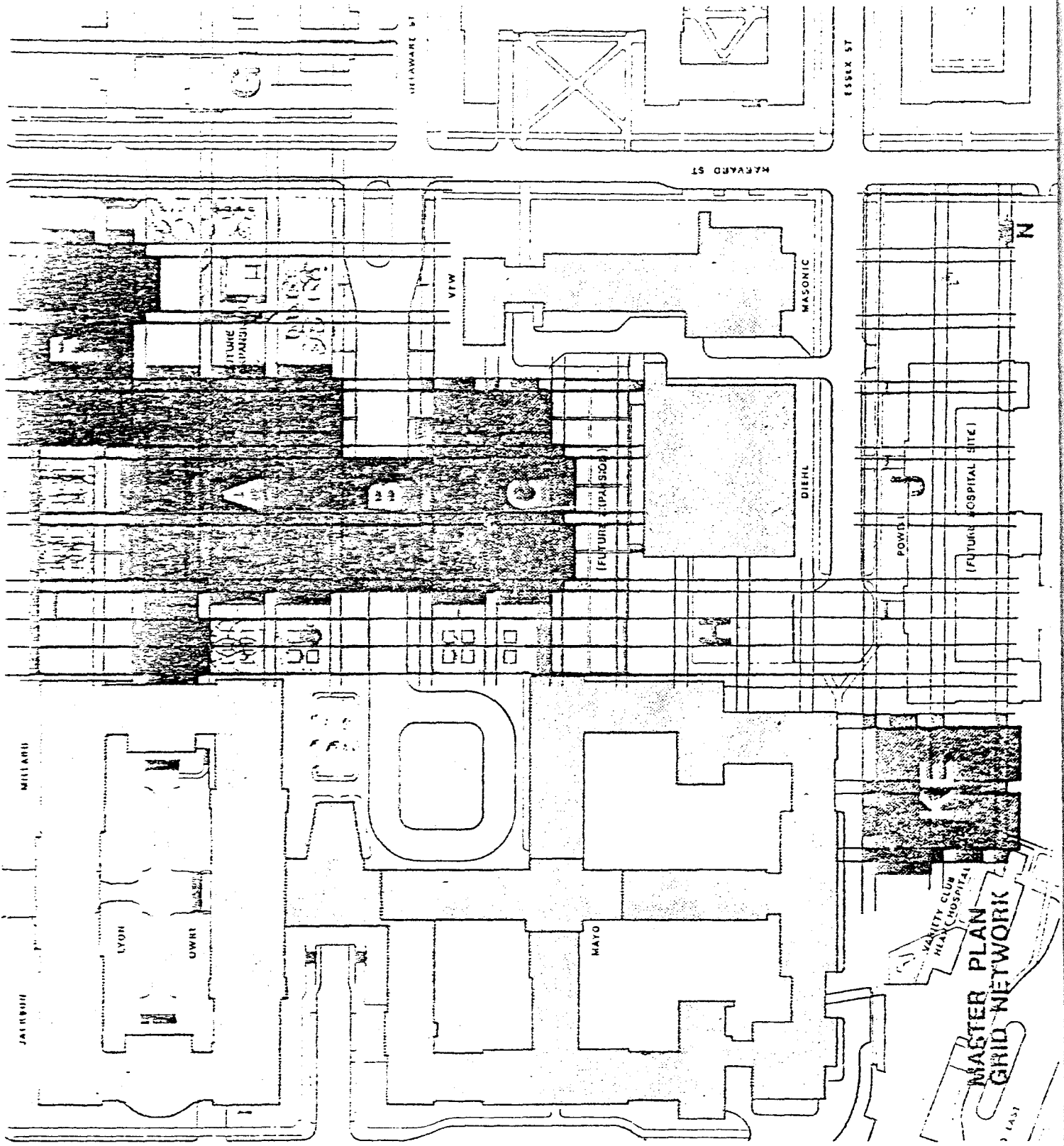
WASHINGTON AVENUE



**LEGEND**

- A College of Dentistry
- BC College of Medicine
- F College of Pharmacy
- K School of Nursing
- KE Central Receiving

0 100 200





W. Project Cost Estimate

Outline of the method used in preparing the construction budget entered on Item 18 of the HEW Form 537:

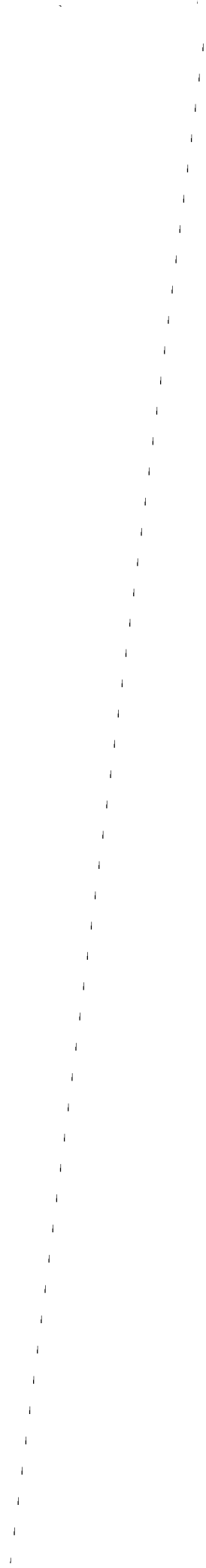
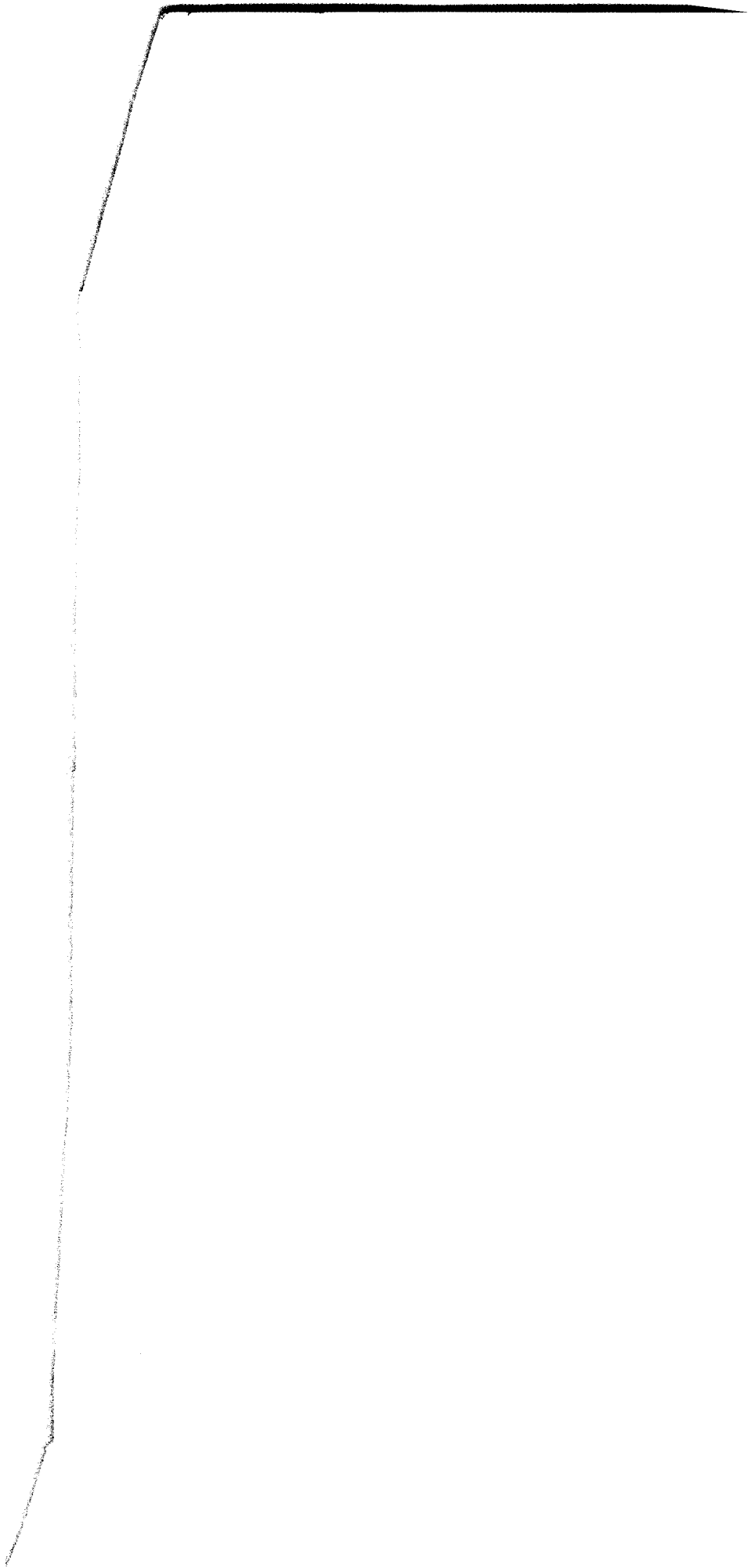
UNIT F APPLICATION New Construction	<u>\$\$ TOTAL</u>	<u>\$\$ ELIGIBLE FOR FEDERAL ASSISTANCE</u>
1. Building Costs and Fixed Equipment		
A. General Construction	9,141,530	
B. Plumbing	1,191,070	
C. Heat, Air Conditioning, Ventilation	2,392,730	
D. Electrical	1,422,400	
E. Elevators	315,940	
F. Other Building Work, Keying, Fire Alarms, etc.	<u>11,000</u>	
G. TOTAL FOR BUILDING WORK	14,474,670	14,474,670    16,273,067
2. Site Work		
A. Site Preparation	3,000	
B. Site Development (Landscaping and planing, grade, walks and drives)	<i>add dem.</i> 165,000	(- demolition)
C. Utility Conn. (Sanitary Sewer, Water Conn., Storm Sewer, Gas Service)	<u>51,000</u>	
D. SUBTOTAL	219,000	133,508    143,200
3. —		
4. Central Utility Plant		
A. Switchgear (Pro-Rata)	<u>209,854 sfg X 208,821</u>	
	1,521,263	27,009
B. Control Center	<u>209,854 sfg X 279,788</u>	
	1,521,263	36,215
C. Central Plant	<u>17,120#/Hr. X 1,805,125</u>	
	175,000#/Hr. (Phase I)	<u>176,593</u>
D. SUBTOTAL	239,817	239,817



UNIT F  
Budget Comparison

September 8,

	6/1/77 Budget	8/31/77 Budget	Difference	Remarks
I. Construction	16,715,000	16,437,884	- 277,116	Reduction due to incre in non-bldg costs.
II. Non-Building Costs				
A. Sitework				
1. Water service	3,600	15,700	+ 12,100	Revised estimate
2. Walks, steps, curbs	24,500	28,400	+ 3,900	Revised estimate
3. Street lighting	28,500	-	- 28,500	Revised estimate
4. Street & serv. drives	10,000	-	- 10,000	Revised estimate
5. Landscaping	8,000	900	- 7,100	Revised estimate
6. Remove exist. util.	9,500	6,500	- 3,000	Revised estimate
7. Signs, guardrails, etc.	7,200	5,000	- 2,200	Revised estimate
8. Temp. drives, walks	950	2,000	+ 1,050	Revised estimate
9. Bikeracks	2,600	-	- 2,600	Part of contr. docs.
10. Testing & balancing	35,000	31,500	- 3,500	Revised estimate
11. Shakedown	150,000	-	- 150,000	Eliminated as austerity measure
12. Electric service	-	53,200	+ 53,200	Overlooked in early budget reviews
	279,850	143,200	- 136,650	
B. Architectural Fees				
1. Base fee	1,170,000 (7%)	1,019,149 (6.2%)	- 150,851	Reduction due to decreas in % & constr. cost
2. Extra services	100,000	50,000	- 50,000	Revised estimate
3. Re-design & re-eval.	100,000	-	- 100,000	Revised estimate
4. Change Orders	35,150	-	- 35,150	Included in constr. cont.
5. Reimbursables	30,000	50,000	+ 20,000	Revised estimate
	1,435,150	1,119,149	- 316,001	
C. Construction Management				
1. Lump sum fee	-	180,000	+ 180,000	New item added - replaces other consultants.
2. Reimbursables	-	20,000	+ 20,000	
		200,000	+ 200,000	
D. Consultants				
1. Special	10,000	-	- 10,000	Eliminated due to
2. Scheduling	75,000	-	- 75,000	inclusion of Constr.
3. Cost	50,000	-	- 50,000	Management
	135,000		- 135,000	
SAC Charge	25,000	33,200	+ 8,200	Revised estimate
Constr. sup. @ 1.25%	208,937	205,474	- 3,463	Due to lower constr. cost
Miscellaneous expenses	21,000	71,000	+ 50,000	Includes \$66,000 deficit
Site survey	37,000	10,000	- 27,000	Revised estimate
Miscellaneous engr.	30,000	30,000	-	
Material testing	25,000	25,000	-	
Contingencies @3%	501,450	493,136	- 8,314	Due to lower constr. cost
Building activation	25,000	25,000	-	
Control Center Wiring	75,000	50,000	- 25,000	Tight budget restraints
Permits @.2%	33,430	32,875	- 555	Due to lower constr. cost
H.S.P.O. @ 1.25%	208,937	205,474	- 3,463	Due to lower constr. cost
Movable Equipment	1,474,846	2,149,208	+ 674,362	Increase due to grant restrictions - per C.P.
	21,230,600	21,230,600		



September 15, 1977

Project Cost Estimate

Federal Project Numbers: 05C 000077-01  
05C 000063-01

UNIT F APPLICATION  
New Construction

	<u>\$\$ TOTAL</u>	<u>\$\$ ELIGIBLE FOR FEDERAL ASSISTANCE</u>
1. Building Costs and Fixed Equipment		
A. General Construction	10,036,400	
B. Plumbing	1,310,419	
C. Heat, Air Conditioning, Ventilation	2,627,536	
D. Electrical	1,562,416	
E. Elevators	346,079	
F. Other Building Work, Keying, Fire Alarms, etc.	<u>11,730</u>	
G. TOTAL FOR BUILDING WORK	15,894,580	15,894,580
2. Sitework		
A. Site Preparation (demolition)	27,220	
B. Site Development		
1. Walks, steps, curbs	28,400	
2. Landscaping	900	---
3. Remove existing utilities	6,500	---
4. Signs, guardrails, etc.	5,000	
5. Temporary drives, walks	2,000	
C. Utility Conn.		
1. Water service	15,700	
2. Electric service	<u>53,200</u>	
D. SUBTOTAL	138,920	131,520
3. ---		
4. Central Utility Plant		
A. Switchgear (Pro-Rata)		
<u>186,000 sfg x 208,821</u>		
1,621,263	23,957	
B. Control Center		
<u>186,000 sfg x 279,788</u>		
1,621,263	32,099	
C. Central Plant		
<u>17,120#/Hr. x 1,805,125</u>		
175,000#/Hr. (Phase I)	<u>176,593</u>	
D. SUBTOTAL	232,649	232,649

5. Total Construction	16,266,149	
6. Built-in Equipment	800,013	800,013
7. A. Architect and Engineer Fees 7% x 16,694,593	1,168,622	
B. Supervision of Construction 1.25% x 16,694,593	208,682	
C. Surveys and test borings	10,000	
D. Other items		
1. Construction Management consultants	200,000	
2. Miscellaneous engineering	30,000	
3. A/E extra services and reimbursables	100,000	
4. Health Sciences Planning Office 1.25% x 16,694,593	208,682	
5. Material testing	25,000	
6. Testing and balancing	<u>31,500</u>	
E. SUBTOTAL	1,982,486	1,982,486
8. Movable Equipment	2,226,825	2,226,825
9. Total Cost of Construction and Fixed Equipment, A/E Fees, and Movable Equipment	21,275,473	
10. Contingency 3% x 16,694,593	500,838	500,838
11. Land Purchase (including apartment buildings)	1,021,400	---
12. Other		
A. Permits .2% x 16,694,593	33,389	33,389
B. SAC charge	33,200	33,200
C. Miscellaneous expenses (Univ. travel, printing, etc.)	35,700	---
	<hr/>	<hr/>
TOTAL DEVELOPMENT COSTS FOR NEW CONSTRUCTION	22,900,000	21,835,500

COMMENTS:

The following list explains the reasons for some of the \$ differences between the grant budget and the current budget:

- Item # 1.G. The increase in \$ is due to inflation. For items A - F, the same percentage relationships in the grant budget were maintained in the current budget.
- 2.D. The decrease in \$ in the current budget is due primarily to revised cost estimates.
- 4.A. The decrease in \$ is due to a reduction in the building square footage.
- 4.B. The decrease in \$ is due to a reduction in the building square footage.
- 6. The difference is due to a combination of inflation and a reduction in the building square footage.
- 7.A. The increase is due to the increase in construction costs.
- 7.B. The increase is due to the increase in construction costs.
- 7.C. The difference is a result of a revised cost estimate.
- 7.E. The difference is due to revised cost estimates and an increase in the construction costs.
- 8. The difference is due to a reduction in the building square footage.
- 10. The difference is a result of an increase in construction costs.

213,000

186,000

*what items  
is 9, + kin-  
6.2*

*frank new  
70% const.  
+ decrease it  
some - 2000  
per cent*

*Why is 10% not  
clearly (10%)*

*equivalent  
new const'd  
some less  
to take out  
to loss of  
2 auditors?*

1. Total Construction		14,933,487	
2. Built-In Equipment		824,030	824,030
3. Architect and Engineer Fees			
6.2 7% X 15,287,700		-1,070,159	
Redesign		60,000	
4. Supervision of Construction			
1 1/4% X 15,287,700		191,096	
5. Surveys and test borings		37,000	
6. Other items (e.g., Consultants, Printing, Travel, University of Minnesota Engineering Reviews, Miscellaneous Engineering)		60,000	
7. SUBTOTAL	1,795,097	1,418,235	871,235
8. Movable Equipment		2,293,155	2,293,155
9. Total Cost of Construction and Fixed Equipment, A/E Fees, and Movable Equipment		19,468,907	
10. Contingency			
3% X 15,287,700		458,631	458,631
11. Land Purchase (including apartment buildings)		1,021,400	---
TOTAL DEVELOPMENT COSTS FOR NEW CONSTRUCTION		20,948,938	19,295,046
		22,900,000	

The construction budget as entered in HEW Form 537 is a detailed breakdown based on completed schematic drawings and actual unit cost of the various subsystems as they were bid on Unit A. The successful systems cost format was developed by the Architects Collaborative, Inc., in collaboration with Hodges, Jage, Sullivan, and Aller Construction Consultants.

*Approved  
[Signature]  
[Signature]  
[Signature]*

COST RATIOS:

Gross Area in Facility = 213,039 sq.ft.

Net Area in Facility = 111,584 sq.ft.

Gross Area (Pharmacy) = 213,039 X 50% = 106,519 (approx.) sq.ft.

Net Area (Pharmacy) = 56,384 sq.ft.

Total Project Cost = \$20,948,938

Total Project Cost (Pharmacy portion) = \$20,948,938 X 50%

= \$10,474,469

Cost/GSF (Pharmacy) = \$98

Cost/NSF (Pharmacy) = \$186

Total Construction Cost = \$14,933,487

Total Construction Cost (Pharmacy portion) = \$14,933,487 X 50%

= \$ 7,466,744

Cost/GSF (Pharmacy) = \$70

Cost/NSF (Pharmacy) = \$132

Amount of Federal Assistance Requested (Pharmacy) = \$4,823,761

Cost/GSF (Pharmacy) = \$45

Cost/NSF (Pharmacy) = \$86

Enrollment Increase (Pharmacy) = 49

Per student capital outlay of project costs (Pharmacy portion)

= \$213,765

Per student capital outlay of construction costs (Pharmacy portion)

= \$152,383

Per student cost of project to the Federal government (Pharmacy)

= \$ 98,444

VI. ENVIRONMENTAL IMPACT STATEMENT

Under separate cover.



Appendix A

- University of Minnesota  
Bulletin 1973-75  
GRADUATE PROGRAMS IN THE  
HEALTH SCIENCES  
(portion relating to  
the College of Pharmacy)
  
- GRADUATE RESEARCH TRAINING  
PHARMACEUTICAL SCIENCES  
College of Pharmacy  
University of Minnesota

M 8859f, w.d.s.u. PEDIATRIC ENDOCRINOLOGY

M 8860f, w.d.s.u. PEDIATRIC NEPHROLOGY

CHILD PSYCHIATRY. (See Psychiatry)

PEDIATRIC NEUROLOGY. Staff

RESEARCH IN PATHOLOGY, BIOCHEMISTRY, OR PHYSIOLOGY. (See these departments)

**PHARMACEUTICS (Phm)**

OFFERED AT MINNEAPOLIS

*Professor*Edward G. Rippie, Ph.D., head,  
director of graduate study,  
pharmaceuticsHugh F. Kabat, Ph.D., head,  
department of Clinical Pharmacy,  
and director of graduate study,  
Hospital Pharmacy*Associate Professor*Robert H. Miller, Ph.D.  
John D. McRae, Ph.D.*Assistant Professor*Kenneth W. Miller, Ph.D.  
Kenneth C. Nelson, Ph.D.  
Ronald J. Sawchuck, Ph.D.

Pharmaceutics is concerned with the elucidation, analysis, and means of control of the physical chemical properties of the drug and its dosage forms as they influence its availability to the site of action in the living organism. Such studies include the investigation of the functional relationships existing between tissue or body fluid concentrations of drugs or related compounds and the rates or mechanisms of their absorption, distribution, metabolism, excretion, and pharmacological activity. Thus the area is broad, offering specialization ranging from highly physical to strongly biological orientations.

**Program in Hospital Pharmacy**

**Prerequisites**—A degree from a college of pharmacy and an exceptional scholarship record. Evidence of personal capability and fitness for work in the hospital field is likewise necessary in each case and will be considered an essential requirement for admission.

**Language Requirement**—Students taking the degree under Plan B (without thesis) are not required to offer a language; those taking a Plan A degree (with thesis) must offer one.

**Minor Fields**—The choice of minor fields of study may vary considerably, depending on the research interest of the student. The selection of courses will be made after consultation with the student's adviser.

**Master's Degree**—Either Plan A or Plan B is acceptable.

**Program in Pharmaceutics**

**Prerequisites**—A degree from a college of pharmacy and an exceptional scholastic record. Consideration will also be given to applicants who are graduates of institutions other than colleges of pharmacy, provided their undergraduate courses satisfy the prerequisites for the graduate courses in pharmaceutics.

## Fields of Instruction

The department presents a comprehensive program of course work and research offerings leading to the M.S. and Ph.D. degrees. A basic background in the physical and biological sciences is provided as a firm foundation for the study of modern pharmaceuticals. The broad scope of the program affords the student an exceptional opportunity to elect a course of study which best meets individual needs and interests. Minor fields which are particularly desirable include physical pharmacy, chemical engineering, biochemistry, and pharmacology.

**Language Requirement**—For the Master's degree, either (a) one foreign language or (b) a collateral field of knowledge with the consent of the director of graduate study. For the Ph.D. degree, the option of (a) two foreign languages, (b) one foreign language and a collateral field of knowledge with the consent of the director of graduate study, or (c) two collateral fields of knowledge with the consent of the director of graduate study.

**Minor**—The choice of the particular courses to be presented in fulfillment of a minor in graduate work will be made after consultation with the student's adviser.

**Master's Degree**—Offered under both Plan A and Plan B.

**Doctor's Degree**—Work leading to the Ph.D. degree is offered.

- 5520.\* **VETERINARY SCIENCE** (3 cr; prereq Phl 3070, Pbc 5102 or equiv)  
(Same as VPP 5520) Specialized course. Professional interrelationships between pharmacists and veterinarians, disease problems of domestic animals, and animal pharmacology.
- 5670-5680. **BIOPHARMACEUTICS—DRUG INFORMATION EVALUATION**. (4 cr per qtr; prereq 5670, 5680, Pbc 5102; 3 lect hrs, one 2-hr workshop per wk) N. Müller, Sawchuk  
Consideration of the processes of drug absorption, distribution, metabolism, and excretion *in vivo*. Statistical methods and procedures for critical evaluation of current literature dealing with these subjects.
- 5690.\* **COSMETICS AND DERMATOLOGICAL PREPARATIONS**. (3 cr; prereq 5340) R. Miller  
Pharmaceutical aspects of cosmetics and dermatological preparations.
- 5692-5694.\* **PHARMACEUTICAL MANUFACTURING**. (3-5 cr per qtr; prereq 5640, MedC 5490 or 5. R. Miller  
Production and control of pharmaceutical preparations on a pilot plant scale. Formula development and product evaluation.
- 5696.\* **PREPARATION OF PARENTERAL PRODUCTS**. (3 cr; prereq 2) Nelson  
Principles and procedures involved in manufacture of parenteral products.
- 5699.\* **SPECIAL PROBLEMS IN PHARMACEUTICS**. (Cr ar; prereq 2) Staff  
Problems in formulation, production, and evaluation of pharmaceutical products.
5700. **HOSPITAL PHARMACY ADMINISTRATION I**. (2 cr; prereq 2) Kabat  
History, classification, organization, and functions of departments in a hospital in relation to pharmacy services.
5701. **HOSPITAL PHARMACY ADMINISTRATION II**. (3 cr; prereq 5700, 2) Kabat  
Development, organization, responsibility, and administration of hospital pharmacy services.
5702. **HOSPITAL PHARMACY SURVEY**. (1 cr; prereq 5701, 2) Kabat
- 8100.\* **SEMINAR: PHARMACEUTICS**. (1 cr; required of majors in pharmaceuticals) Staff
- 8200.\* **RESEARCH PROBLEMS**. (Cr ar; prereq 2) Staff  
Experimental investigation of problems in pharmaceuticals.

- 8300-8301. PHARMACEUTICAL DEVELOPMENT. (3 cr per qtr; prereq 5694 or 2; offered when demand warrants) R Miller  
Theoretical and practical problems involved in new product development including F.D.A. regulations, new drug application procedures, patents, and production and control on a pilot plant scale.
- 8310-8311. EXTRACTION, DISTRIBUTION, AND PARTITION SYSTEMS. (3-5 cr per qtr; prereq 2; offered when demand warrants) R Miller  
Theory and practice of extraction of liquids and solids, countercurrent distribution, solvent and solute effects, and chromatography.
- 8400-8401. ADVANCED ANALYTICAL METHODS. (3-5 cr per qtr; prereq MedC 5494, Chem 5503 or 2; offered when demand warrants) Rippe  
Special procedures for control of foods, drugs, and cosmetics, e.g., sampling techniques and design of experiments for control of shelf-life, storage conditions, loss of potency, etc.
8410. STABILIZATION OF PHARMACEUTICALS. (3 cr; prereq Chem 5503) McRae  
Application of physicochemical principles (e.g., chemical kinetics) to elucidate and minimize stability problems in pharmaceutical systems.
- 8420-8421. PHARMACOKINETICS. (3 cr per qtr; prereq 5680, Math 1444 or 2; offered when demand warrants) K Miller, Sawchuk  
Application of compartmental models to study of absorption, distribution, metabolism, and excretion of drugs. Introduction to and use of analog computer in determination of model parameters. Techniques of drug administration and biological fluid sampling in laboratory animals.
8450. DRUG TRANSPORT. (3 cr; prereq Chem 5503) Nelson  
Theory of diffusional transport of drug molecules with applications to pharmaceutical dosage forms.

## PHARMACOGNOSY (Phcg)

OFFERED AT MINNEAPOLIS

*Professor*

E. John Staba, Ph.D., chairman,  
director of graduate study

*Assistant Professor*

Orval L. Mullen, Ph.D.

*Associate Professor*

Yusuf Abdul-Hajj, Ph.D.

**Prerequisites**—A degree from an accredited college of pharmacy and a superior scholastic record. Consideration will also be given to applicants who are graduates of institutions other than colleges of pharmacy.

**Language Requirement**—For the Master's degree, one foreign language is advised but not required. For the Ph.D., the requirement may be met by either (a) two foreign languages, (b) a higher order of proficiency in one foreign language, or (c) one foreign language selected from French, German, Japanese, or Russian plus a collateral field of study or a special research technique.

5820. INTRODUCTORY PHARMACOGNOSY. (3 cr; prereq MicB 3103, MedC 5440 or 2)  
Principles of immunology and allergy, pathogenic microorganisms, and treatment of disease states with immunizing biologicals.
5830. INTRODUCTORY PHARMACOGNOSY. (3 cr; prereq 5820 or 2)  
Production, constituents, metabolism, and therapeutic uses of drugs containing antibiotics, amino acids, and enzymes.
5840. INTRODUCTORY PHARMACOGNOSY. (4 cr; prereq MedC 5440)  
Production, constituents, metabolism, and therapeutic uses of drugs containing hormones, vitamins, and alkaloids.

5360. ANTIBIOTICS. 2 cr; prereq 5300 or 5) Staff  
Natural antibiotic resources. Methods of production, biosynthesis, extraction, and assay; chemical, pharmacological, and chemotherapeutic properties.
5370. VITAMINS AND HORMONES. 2 cr; prereq 5340 or 5) Abul-Hajj  
Biosynthesis, chemistry, biochemical fractions, mechanisms of actions, production, and uses.
5373. ANTIBIOTICS, VITAMINS, AND HORMONES LABORATORY. (1 cr; prereq 5330, 5340 or 5) Staff  
Introduction to techniques used to produce, isolate, and observe biological effects of these substances.
5380. PHARMACEUTICAL BOTANY. 2 cr; prereq 2) Studies
5399. SPECIAL PROBLEMS IN PHARMACOLOGY. (Cr ar; prereq 2) Staff  
Microbiology, chemistry, or biology of medicinal natural products.
8100. MEDICINAL PRODUCT ISOLATION AND IDENTIFICATION. (4 cr; prereq 2; offered when feasible) Staff  
Isolation and identification of a glycoside, pigment (flavonoid, tetracycline, etc.), and a heterocyclic compound (alkaloid, etc.) from either plants or animals.
8200. MEDICINAL PRODUCT ISOLATION AND IDENTIFICATION. (4 cr; prereq 2; offered when feasible) Staff  
Isolation and identification of a terpenoid or steroid, terpene (citral, geraniol, etc.), and a phenylpropane compound, chlorogenic acid, etc., from either plants or animals.
8300. PHARMACEUTICAL FERMENTATION TECHNIQUES. (4 cr; prereq 2)  
Physical and chemical factors involved in production and biotransformation of antibiotics, steroids, alkaloids, growth regulators, and other useful compounds by microorganisms, tissue cultures, and extracellular enzyme preparations.
8400. SELECTED TOPICS. 3 cr on completion of 3 qtrs) Staff
8500. PHARMACOGNOST SEMINAR. (1 cr) Staff
- 8900x. RESEARCH IN PHARMACOLOGY. (Cr ar; prereq 2) Staff

## PHARMACOLOGY (Phcl)

OFFERED AT MINNEAPOLIS

### Professor

Frederick E. Sliemers, M.D., Ph.D., *head*  
Akira E. Takemori, Ph.D.,  
*director of graduate study*  
Nelson D. Goldberg, Ph.D.  
Norman O. Holte, D.D.S.  
Kemia Machne, M.D.  
Gilbert J. Manning, Ph.D.  
Jack W. Miller, Ph.D.  
Bernard L. Minkin, M.D., Ph.D.  
Lawrence C. Weaver, Ph.D.  
Wallace F. White, Ph.D.  
Ben G. Zimmerman, Ph.D.

### Associate Professor

Marion W. Anders, Ph.D.  
Donald S. Hunninghake, M.D.  
Sheidon B. Sparber, Ph.D.

### Assistant Professor

James F. Cumming, M.D., Ph.D.  
Earl W. Durham, Ph.D.  
Patrick E. Hanna, Ph.D.  
Aloysius J. Quebbemann, Ph.D.  
Norman Z. Sladek, Ph.D.

Pharmacology is a broad science which considers the interactions between drugs and other chemicals and living organisms or life processes at all levels of organization. Facilities are available for most types of training and research in this field. For those primarily interested in toxicology or psychopharmacology, appropriate programs are provided. Excellent opportunities exist for cooperative clinical research through members of the staff who hold joint appointments in clinical departments of the Medical School and are members of the Division of Clinical Pharmacology of the Department of Pharmacology.

Graduate training in the field of pharmacology is usually oriented toward the Ph.D. degree. The M.S. degree is offered only under special circumstances.

Several graduate fellowships, research assistantships, teaching assistantships, or traineeships are usually available.

**Prerequisites**—In addition to fulfilling requirements for admission to the Graduate School, students should be well-grounded in the biological and physical sciences.

**Major**—For a major the student is required to complete pharmacology courses 8203 through 8205, 8211 and 8212, and any three other advanced major courses (Phcl 8206, 8207, 8208 or 8214 through 8218). Prerequisite courses include physiology and biochemistry. Additional requirements are courses in histology, statistics, calculus, microbiology, and such others as may be indicated by the major adviser.

**Minor**—To meet the requirements for a minor in pharmacology, the student must satisfactorily complete course work representing 22 credits. These courses must include Phcl 8205, 8211, and 8212 and no more than 8 credits of seminar, of which at least 3 credits shall be Phcl 8204.

**Language Requirement**—For the Master's degree, no foreign language is required. For the Ph.D. degree, either (a) one foreign language or (b) an additional program of course work approved by the department. Routinely acceptable languages for the Ph.D. degree are French, German, Italian, Russian, and Spanish.

**Master's Degree**—Offered only under Plan A.

**Doctor's Degree**—Work leading to the Ph.D. degree is offered.

8203. RESEARCH IN PHARMACOLOGY. (Cr and hrs as; prereq ?) Shideman and staff
8204. SEMINAR: SELECTED TOPICS IN PHARMACOLOGY. (3 cr on completion of 3 qtrs; prereq 5102 or ?) Quebbemann, Hanna, and staff
8205. INTRODUCTION TO PHARMACOLOGY. (5 cr; prereq MdBe 5101 or equiv, Phcl 8110 or equiv or ?) Miller and staff  
Lectures on principal pharmacologic effects of major classes of drugs. General principles and mechanisms of action emphasized.
8206. SEMINAR: MICROASSAY OF DRUGS. (1 cr; prereq Chem 3101 or ?; offered 1973-74 and alt yrs) Hoitzman and staff  
Review of analytical methods for identification and quantitation of drugs in body fluids, with emphasis on instrument and radiometric techniques. Basic principles, applications, and limits of each method discussed. Demonstrations.
8207. SEMINAR: PSYCHOPHARMACOLOGY. (3 cr on completion of 3 qtrs; prereq ?) Sparber and staff  
Selected topics on behavioral aspects of drug action.
8208. PSYCHOPHARMACOLOGY. (2 cr; prereq 8205, Psy 5013, Psy 5062 or ?; offered 1974-75 and alt yrs) Sparber and staff  
Lectures on methodologies currently in use to study relationships between drugs and biochemical and behavioral consequences. Included will be discussions of functional biogenic amine pathways and how specific manipulations result in altered behavior; theories of biochemical feedback activation, induction and inhibition, and theories of tolerance to and/or dependence upon stimulants, hallucinogens, depressants, and opiates.
8209. PHYSIOCHEMICAL CONCEPTS OF DRUG ACTION. (2 cr; prereq 8205 or equiv or ?; offered 1973-74 and alt yrs) Hanna and staff  
Lectures, discussion periods, and outside reading assignments on fundamental principles of chemical-biological interactions with emphasis on molecular mechanisms of drug action.

8211. **PHYSIOLOGICAL DISPOSITION OF DRUGS.** (3 cr; prereq MdBc 5101 or equiv or 2; offered 1973-74 and alt yrs) Manning and staff  
Principles underlying absorption, distribution, biotransformation, and excretion of drugs.
8212. **PHARMACODYNAMICS.** (3 cr; prereq 8205 or 2) Takemori and staff  
Lectures and laboratory experiments for studying physiological, biochemical, and behavioral effects of drugs.
8214. **TOXICOLOGY.** (3 cr; prereq 8205 or equiv or 2; offered 1973-74 and alt yrs) Anders and staff  
Lectures on toxic effects and mechanisms of intoxication of drugs and foreign chemicals known to adversely alter the health and ecology of man and animals.
8215. **CHEMOTHERAPY.** (2 cr; prereq 8205 or equiv, MdBc 5101 or equiv, MicB 5105 or equiv or 2; offered 1974-75 and alt yrs) Sladek and staff  
General principles of antimicrobial and antineoplastic chemotherapy with emphasis on mechanisms of action and bases for selective toxicity. Course consists of lectures, outside reading, discussion periods, and demonstrations.
8216. **ENDOCRINE PHARMACOLOGY.** (2 cr; prereq 8205, MdBc 5101 or equiv, Fhsl 8110 or equiv or 2; offered 1974-75 and alt yrs) Goldberg and staff  
Lectures on biochemical and molecular aspects of hormone and neurohormone actions, including mechanism by which pharmacological agents influence these actions. Emphasis placed on pharmacological and biochemical characteristics of plasma membrane receptors, as well as intracellular components involved in expression of hormone actions.
8217. **CARDIOVASCULAR-RENAL PHARMACOLOGY.** (2 cr; prereq 8205 or equiv or 2; offered 1974-75 and alt yrs) Zimmerman and staff  
Physiological regulation of and pharmacological effects on cardiovascular and renal systems. Neurohumoral modification of cardiac function, peripheral and renal vascular resistance, hypertension, antihypertensive agents, and active transport mechanisms in the kidney.
8218. **NEUROPHARMACOLOGY: BIOPHYSICAL ASPECTS.** (2 cr; prereq 3; offered 1974-75 and alt yrs) Machns and staff  
Lectures on mechanism of action of drugs on excitable membranes and postsynaptic membrane receptors. Discussion of electrophysiological methods used to evaluate drug action at cellular level and on a population of neurons.
8219. **BEHAVIORAL PHARMACOLOGY.** (3 cr; prereq 8205 and Psy 5017 or 2) Pickens and staff  
Behavioral effects of drugs.

## PHARMACOLOGY

OFFERED AT ROCHESTER

### Professor

John R. Blinks, M.D., *chairman*  
Frank T. Maber, M.D., Ph.D.

### Assistant Professor

William S. Brimijoin, Ph.D.  
Joseph H. Szurszewski, Ph.D.  
Stuart R. Taylor, Ph.D.  
Richard Weinschilboum, M.D.

Research programs for the Ph.D. degree may be developed with members of the faculty and will usually involve course work on the Minneapolis Campus.

- M 5100, 5101, and 5102. **GENERAL PHARMACOLOGY.** (3 cr per qtr) Blinks and staff
- M 8200. **READINGS IN PHARMACOLOGY.** (Cr and hrs as) Staff
- M 8201. **RESEARCH IN PHARMACOLOGY.** (Cr and hrs as) Staff
- M 8202. **PHARMACOLOGY OF HEART MUSCLE.** (1½ cr) Blinks
- M 8203. **NEUROPHARMACOLOGY.** (1½ cr) Weinschilboum, Brimijoin
- M 8880. **SEMINARS IN NERVE AND MUSCLE.** (1½ cr) Szurszewski and staff

8400. SPECIAL MEDICAL PROBLEMS. (Cr or) Staff  
Opportunities for study in medication errors, drug distribution systems, patterns of drug utilization, and periodic analysis of prescribed medication according to diagnosis, age, dosage form, effectiveness, side effects, incidence of adverse effects, or drug use and misuse.
- 8500, 8501. PHARMACY AND ITS ENVIRONMENT. (3 cr per qtr; prereq 2; offered 1973-74 and 1974-75)  
Cultural elements of pharmacy. Development of present state of pharmacy practice. Social problems related to drug use, abuse, or nonuse by the patient and practitioner. Role of pharmacist as health practitioner: within the profession, in relation to other health practitioners, and in relation to the general public.
8700. HOSPITAL PHARMACY ADMINISTRATION I. (2 cr) Jones  
History, classification, organization, and functions of hospital departments in relation to the pharmacy service.
8701. HOSPITAL PHARMACY ADMINISTRATION II. (3 cr; prereq 8700, 2) Grogan
8702. HOSPITAL PHARMACY SURVEY. (1 cr; prereq 8701, 2) Kabat

## PHYSICAL MEDICINE AND REHABILITATION (PMed)

OFFERED AT MINNEAPOLIS

### Professor

Frederic J. Kutke, M.D., Ph.D., *head*  
Essam A. Awad, M.D., Ph.D.,  
*director of graduate study*  
Peter F. Brigg, Ph.D.  
Glenn Gullickson, Jr., M.D., Ph.D.  
William G. Knaflitz, Ph.D.

### Clinical Professor

Paul M. Ellwood, Jr., M.D.  
Miland E. Knapp, M.D., M.S.

### Associate Professor

Thomas Anderson, M.D., M.S.  
Gary T. Atbelstan, Ph.D.  
Theodore Cole, M.D.  
Daniel Halpern, M.D.  
Pearl Rosenberg, Ph.D.

## Physical Therapy

### Professor

Glenn Gullickson, Jr., M.D., Ph.D.  
Frederic J. Kutke, M.D., Ph.D.  
William G. Knaflitz, Ph.D.

Theodore M. Cole, M.D.  
Martin O. Mundale, M.S.  
James F. Ponnilla, M.S.  
Pearl P. Rosenberg, Ph.D.

### Associate Professor

Wilbur L. Moen, Ed.D., B.S., *Director*  
Helen V. Skowronski, M.S.,  
*director of graduate study*  
John D. Allison, M.S.  
Thomas P. Anderson, M.D.  
Gary T. Atherton, Ph.D.

### Assistant Professor

Jessie K. M. Easton, M.D.  
Mary A. Price, M.D.

### Instructor

Donna L. Pauley, B.S.

The field of physical medicine and rehabilitation, which includes physical therapy, occupational therapy, vocational counseling, guidance, and training of the physically handicapped, is one of the most rapidly expanding specialties in medicine. Trained physiatrists, of whom there are an insufficient number, are in great demand in medical schools, private practice, Veterans Administration hospitals, and many state hospitals for the chronically disabled. Physical medicine, therefore, offers unusual opportunity to the young physician.

Opportunity for clinical and fundamental research, as well as clinical experience and training, is offered at University of Minnesota Hospitals. Additional clinical experience is obtained at Hennepin County General Hospital, Minne-



## GRADUATE RESEARCH TRAINING

Graduate programs are available in the following pharmaceutical areas:

Hospital Pharmacy  
Medicinal Chemistry  
Pharmaceutics  
Pharmacognosy  
Pharmacy Administration

The graduate program is designed to provide a rounded experience by appropriate coursework, seminars, and special lectures supporting a continuing, individualized research program.

### EMPLOYMENT OPPORTUNITIES:

A large spectrum of employment opportunities awaits the successful Ph.D. candidate in such diversified areas as university teaching and research, industrial research, private and governmental institutional research, governmental agencies, association work, etc. In some areas there is a decided shortage.

### RESEARCH:

Each student conducts original research under the supervision of a staff member who is selected by the student within one year of his matriculation. Such research is directed toward the development of the M.S. or Ph.D. thesis and is of central importance in the training of the candidate.

### ADMISSION REQUIREMENTS:

Candidates for graduate study in the Pharmaceutical Sciences should possess a Bachelor's degree in some science field such as pharmacy (required for Hospital Pharmacy), chemistry, biology, pre-medical study, etc. Ordinarily, a background including elementary coursework in organic chemistry, biochemistry, biology, physiology, microbiology, pharmacology and physical chemistry is desirable for admission to the laboratory oriented areas although a Bachelor's degree in the social sciences may be an asset in Pharmacy Administration. Deficiencies in these areas may be removed by remedial course work early in the candidate's graduate tenure.

FINANCIAL ASSISTANCE:

Qualified candidates for study in the Pharmaceutical Sciences ordinarily can expect to have some type of subsidy. Normally, these will be in the form of teaching assistantships, research assistantships or predoctoral fellowships. The annual stipend for subsidized students ranges up to \$4,750 for nine months.

HOSPITAL PHARMACY

Hospital Pharmacy concerns itself with the practice of the profession of pharmacy in the institutional setting including those special services, activities and programs which are unique to that environment.

GRADUATE PROGRAM IN HOSPITAL PHARMACY

The program of graduate studies in Hospital Pharmacy is established in the College of Pharmacy but draws upon the resources of the total university for coursework opportunities. A basic core of subjects pertaining to the practice of pharmacy in hospitals is required with additional courses being available to meet the needs and strengths of the individual student. This comprehensive program of coursework and research leads to the M.S. degree in Hospital Pharmacy.

The following lists some of the interests and publications of the faculty of the program.

Hospital Pharmacy Administration - Charles M. King, Jr., Assistant Professor, Director of Graduate Studies in Hospital Pharmacy

The planning for and administration of pharmacy services in institutions, drug distribution systems, drug information programs, use of computer technology in providing pharmaceutical services, control mechanisms, management and administrative techniques, drug utilization review, education and training, drug use control, and extension of the role of the pharmacist.

Selected Publications

"Drug Information Services: Two Operational Models," C. M. King, (with V. F. Thudium), U.S. Government Printing Office, 1972.

"A Documented Cross-Indexed Manual to Human Drug Interactions," C. M. King, (with N. J. Sawyer and B. A. Hellums), A.J.H.P., 27:12 (Dec. 7) 1970.

"A Course in Clinical Pharmacy in Alabama," C. M. King, (with T. N. Burrell), Alabama Journal of Pharmacy, (June) 1970.

"A Course in Administrative Principles for Hospital Pharmacists," C. M. King (with H. L. Flack), A.J.H.P., 21:9 (Sept.) 1964.

Hospital Pharmacy - Dr. Hugh F. Kabat, Professor

Patient compliance studies; job satisfaction studies; drug distribution studies; long term care facility drug distribution; patient consultation studies; drug utilization review studies; role definition of extended roles for pharmacists and drug induced modification of laboratory test values.

Selected Publications

"Drug Utilization Review in Long Term Care Facilities," H. F. Kabat, (with J. Stewart and J. Marotilla) J.A.Ph.A., NS15:1 (Jan.) 1975.

"Drug-Induced Modifications of Laboratory Test Values - Revised 1973," H. F. Kabat, (with N. V. Constantino) Amer. J. Hosp. Pharm., 30:24-71 (Jan.) 1973.

"Job Satisfaction Among Minnesota Hospital Pharmacists," H. F. Kabat, (with R. E. Williamson), Amer. J. Hosp. Pharm., 29:942-946 (Nov.) 1972.

"Allocating Hospital Pharmacy Resources," H. F. Kabat, (with R. J. Streit), Hosp. Pharm., 10:338-347 (Oct.) 1972.

Pharmacy Administration - Albert I. Wertheimer, Associate Professor and Head, Director of Graduate Studies in Pharmacy Administration

Socioeconomics of health care delivery and evaluation of pharmaceutical services.

Selected Publications

"The Effect of Hospital Formularies on the Prescribing of Drugs in Private Practice," A. I. Wertheimer (with B. Rowles and B. Bunting), Hospital Pharmacy, 8, No. 8, 254 (Aug.) 1973.

"Nurses' Attitudes Toward Pharmaceutical Services," A. I. Wertheimer, (with P. R. Grout), Hospital Formulary Management, 8, No. 3, 18 (Mar.) 1973.

"More on the Pharmacist as a Drug Consultant: Three Case Studies," A. I. Wertheimer, (with E. Shefter and R. Cooper), Drug Intelligence and Clinical Pharmacy, 7, No. 2, 56-61 (Feb.) 1973.

"A Decentralized Unit Dose Pharmacy Service: Asset or Liability?",  
A. I. Wertheimer, (with D. Harbo, E. Myers, L. Chan and R. Hutchinson,  
A.J.H.P., 29, No. 11, 922-927 (Nov.) 1972.

"A Community Formulary?" A. I. Wertheimer, (with R. V. Evanson),  
JAPHA, NS11, 10, 5-9 (Oct.) 1971.

"A Leased Hospital Pharmacy--Why Not?", A. I. Wertheimer, Hospital  
Pharmacy, 5:10, 3 (Oct.) 1971.

Hospital Pharmacy Administration - Thomas F. Jones, Assistant Professor

Health systems planning, marketing of health care, primary care,  
development, clinical role development of pharmacist.

#### Selected Publications

"Pharmacy and the Hospital," T. F. Jones, Minnesota Pharmacist,  
25:6 (1970).

"Clinical Pharmacist: A Guide to Successful Course Implementation."  
T. F. Jones, Hospitals, 43:109, 1969.

Hospital Pharmacy - James E. Grogan, Adjunct Assistant Professor

Development of the service aspect of pharmacy practice, training  
of hospital pharmacy managers, development and upward mobility of  
technicians and the utilization of pharmacist skills in patient care.

#### Selected Publications

"The Social and Economic Costs of Ileitis and Colitis," J. E. Grogan,  
(with M. C. Smith), The Apothecary, (In Press).

"The Four-forty Work Week for the Hospital Pharmacy: A Discussion  
and Decision Guide," J. E. Grogan, (with A. L. Gurtel), Am. J. Hosp.  
Pharm. No. 5, Vol. 31 (May) 1974.

"The National Cost of Ulcerative Colitis: A National Estimate for  
the Year 1968," J. E. Grogan, (with M. C. Smith), Inquiry, No. 2,  
10:61, (June) 1973.

"What Ulcerative Colitis Patients Know and Think about Their Drugs,"  
J. E. Grogan, (with M. C. Smith), Pharmacy Times, (Feb.) 1973.

"Three Months of Observations in Rural Pharmacies: Opportunities  
for Professional Consultation," J. E. Grogan, (with M. C. Smith, and  
I. W. Waters), J.A.Ph.A., No. 2, NS11:64 (Feb.) 1971.

## MEDICINAL CHEMISTRY

Medicinal Chemistry is concerned with studies of the chemistry of substances designed to meet a specific physiological need. Such studies involve the synthesis, or isolation from natural sources, of such substances together with suitable purification, characterization, structural elucidation, structural modification and other chemical and biochemical studies necessary for an understanding of the relationship of molecular structure with biological activity and realization of maximal specific activity.

### GRADUATE PROGRAM IN MEDICINAL CHEMISTRY

The Medicinal Chemistry Department at the College of Pharmacy, University of Minnesota, presents a comprehensive program of coursework and research offerings leading to the M.S. and Ph.D. degrees. The program provides a background in modern medicinal chemistry and is characterized by having a strong biological component superimposed on a firm foundation in organic chemistry. The program has sufficient flexibility to permit designing a course of study to meet the needs and interests of the individual student. In addition to coursework offerings within the Medicinal Chemistry Department the student will also be engaged in interdisciplinary studies in other University departments such as organic chemistry, biochemistry, and pharmacology.

Specific research interests of faculty members in this department are listed below:

#### Drug metabolism and antimetabolites -- Dr. Mahmoud M. Abdel-Monem, Associate Professor

Studies encompass the identification of drug metabolites in vivo and in vitro and the examination of the biochemical mechanisms of drug biotransformations. Studies in the area of amino acid antimetabolites are also carried out in an attempt to elucidate the physiological function of the polyamines.

#### Selected Publications

"Separation of the Dansyl Derivatives of Polyamines and Related Compounds by Thin Layer Chromatography and High Pressure Liquid Chromatography," M. M. Abdel-Monem, (with K. Ohno), J. Chromatography in press (1975).

"Inhibitors of Polyamine Biosynthesis. 2- $\alpha$ -Alkyl- and Benzyl-(I)-Ornithine," M. M. Abdel-Monem, (with N. E. Newton and B. C. Ho), J. Med. Chem., in press (1975).

"Inhibitors of Polyamine Biosynthesis. 1- $\alpha$ -Methyl (+)-Ornithine, an Inhibitor of Ornithine Decarboxylase, M. M. Abdel-Monem, (with N. E. Newton and C. E. Weeks), J. of Med. Chem., 17, 447 (1974).

"Acid-Labile Derivatives of Chloramphenicol as Potential Latentiation Forms," M. M. Abdel-Monem, (with A. D. Gillet), J. Med. Chem., 16:992 (1973).

"Pharmacokinetics, Metabolism and Urinary Excretion of [<sup>3</sup>H]Alphaprodine in Dogs, M. M. Abdel-Monem, (with P. A. Harris and P. S. Portoghese) J. Med. Chem., 15:706 (1972).

Medicinal Chemistry - Dr. Dwight S. Fullerton, Assistant Professor

Structure-Activity Studies of Digitalis Receptors; Design of Nontoxic Cardenolides; Biologically Active Sesquiterpenes; Development of Useful Synthetic Reactions; Forensic Drug Analysis

Selected Publications

"22-Methylene Cardenolides," D. S. Fullerton, (with T. M. Gilman) presented August, 1974 at the Academy of Pharmaceutical Sciences Meeting, Chicago; To be published in J. Pharmaceutical Sciences.

"Reactions of Interest In Medicinal Chemistry," D. S. Fullerton (with G. L. Kenyon and D. H. Eargle), Annual Reports in Medicinal Chemistry, 9:260 (1973).

"A Critical Evaluation of Forensic Analysis," D. S. Fullerton (with M. G. Kurzman), J. Contemporary Drug Problems, in press (Fall, 1974 issue)

"Steroids with Abnormal Internal Configurations: A Stereospecific Synthesis of 8 $\alpha$ -Methyl Steroids," D. S. Fullerton (with W. G. Dauben), J. Org. Chem., 36:3277 (1971).

"Allylic Oxidation of Olefins with Chromium Trioxide-Pyridine Complex," D. S. Fullerton (with W. G. Dauben and M. Lorber), J. Org. Chem., 34:3587 (1971).

Medicinal Chemistry - Dr. Patrick E. Hanna, Associate Professor

Most drugs and other chemicals to which man and animals are exposed are metabolized prior to excretion from the body. The types of metabolic transformations which a substance undergoes and the rates at which these biotransformations occur often have a profound influence upon the effect a given compound has on the body.

Current research projects are directed toward development of an understanding of the ways in which the molecular properties of drugs and other foreign compounds influence specific biotransformation reactions. This research includes study of the metabolic activation of cancer producing chemicals.

Other research involves investigations of the stereochemical aspects of drug-receptor interactions. Conformationally restricted compounds are being used to study the interactions between drugs and histamine receptors as well as between drugs and histamine metabolizing enzymes.

#### Selected Publications

"Conformationally Restricted Analogs of Histamine H<sub>1</sub> Receptor Antagonists. 2-Phenyl- and 2-Benzyl-1,2,3,4-Tetrahydro-4-Dimethylaminoisoquinoline," P. E. Hanna (with V. R. Grund and M. W. Anders), J. Med. Chem., 17:1020 (1974).

"Inhibition and Potentiation by trans- and cis-1,5-Diphenyl-3-dimethylaminopyrrolidine," P. E. Hanna, (with R. T. Borchardt), J. Med. Chem., 17:471 (1974).

"3-Amino-5-Phenyl-1-(2-pyridyl)pyrrolidines: Synthesis and Stereochemistry," P. E. Hanna, J. Heterocycl. Chem., 10:747 (1973).

"Conformationally Restricted Analogs of Histamine H<sub>1</sub> Receptor Antagonists. trans- and cis-1,5-Diphenyl-3-dimethylaminopyrrolidine," P. E. Hanna (with A. E. Ahmed), J. Med. Chem., 16:963 (1973).

"1,5-Diphenyl-3-dimethylaminopyrrolidine: A Long-Acting Histamine Antagonist," P. E. Hanna, (with A. E. Ahmed, V. R. Grund and R. L. Merriman), J. Pharm. Sci., 62:512 (1973).

#### Medicinal Chemistry - Dr. Herbert T. Nagasawa, Professor

Syntheses of amino acid analogs, homologs and analogs of homologs, with antimetabolic or chemotherapeutic potential, using biochemical rationale as basis for their design. Presently, attention is being focused on the synthesis of proline and lysine analogs that are potential inhibitors of collagen biosynthesis, wherein blocking groups are placed in positions of enzymatic hydroxylation of these amino acids. Possibilities are also being explored for the synthesis of a wide variety of other proline, ornithine, lysine, citrulline and arginine analogs and homologs.

The metabolic bases for the action of certain drugs are being investigated by studying their biochemical transformations and metabolic disposition in animals with the aid of the radiolabeled drugs. Current focus is on ethanol metabolism and its influence on the metabolism of other drugs. Parallel interest lies in the design, synthesis and biochemical and pharmacological evaluation of drugs latentiated by enzyme action.

#### Selected Publications

"The Determination of Theophylline and Its Metabolites in Human Urine and Serum by High-pressure Liquid Chromatography," H. T. Nagasawa (with R. D. Thompson and J. W. Jenne), J. Lab. Clin. Med., 84:584-593 (1973)

UNIT F

1.	Building work	16,512,884
2.	Site work	143,200
3.	-	
4.	-	
5.	Total	16,656,084
6.	- (Included in Building work)	
7.	Architectural and engineering costs	
	a. A/E basic fee	1,019,149
	b. Supervision	410,948
	c. Surveys, tests, borings	35,000
	d. Other items	
	1. Miscellaneous engineering	30,000
	2. A/E extra services & reimbursables	100,000
	3. Construction Management	200,000
8.	Movable equipment	2,149,208
9.	Total	3,944,305
10.	Contingency	493,136
11.	-	
12.	-	
13.	Other	
	1. SAC charge	33,200
	2. Permits	32,875
	3. Miscellaneous expenses (travel, printing, etc.)	71,000
		137,075
14.	Subtotal	21,230,600
15.	-	
16.	Total	21,230,600



UNIT F

1.	Building work	16,512,884
2.	Site work	143,200
3.	-	
4.	-	
5.	Total	16,656,084
6.	- (Included in Building work)	
7.	Architectural and engineering costs	
	a. A/E basic fee	1,019,149
	b. Supervision	410,948
	c. Surveys, tests, borings	35,000
	d. Other items	
	1. Miscellaneous engineering	30,000
	2. A/E extra services & reimbursables	100,000
	3. Construction Management	200,000
8.	Movable equipment	2,149,208
9.	Total	3,944,305
10.	Contingency	493,136
11.	-	
12.	-	
13.	Other	
	1. SAC charge	33,200
	2. Permits	32,875
	3. Miscellaneous expenses (travel, printing, etc.)	71,000
		137,075
14.	Subtotal	21,230,600
15.	-	
16.	Total	21,230,600

PRELIMINARY - NOT RESOLVED July 29/77

Unit F movable equipment/furnishings budget

Nursing Share	—	\$ 779,673
Pharmacy Share	—	\$ 1,146,577
Maps		40,000
Blinds & Drapes		25,000
Upholstery		80,000
Telephones		30,000
Housekeeping		30,000
Shared Overhead Cost		130,000
Contingency		60,000
Environmental Rooms.	(part of construction cost)	
Shared Sem's/classrooms		60,000
		<hr/>
Total Movable Equipment/Furnishings		<u>2,293,155</u>

Prepared by P. Maupin

Mod. equip.

revised N share	30.56
revised P share	<u>50.53</u>
	80.89

revised m.c. elig. amt :	2,149,208
	<u>x .81</u>
	1,740,858

revised N elig.	652,499
	<u>x .67</u>
	437,174 N share

1,740,858
<u>- 437,174</u>
1,303,684 - revised P share?

Bldg work

revised bid. 14,328,055

x 80.87

11,598,963

less Nursing -4,349,998

rev. Pharmacy? 7,248,965

but 14,328,055

x 50.53

7,239,966

4,349,998

x .67

2,914,499

2,914,499

3,624,482

6,538,981

7,248,965

x .50

3,624,482

1) Why does total elig. cost change in revised sheet? Does this mean that the m.e. budget can be reduced to \$2,149,208?

2) Actual amt of fed. assistance has been changed for both P+V from the orig. grant. How does this affect P (no revised sheet)?

3)

16. BUDGET INFORMATION  
ESTIMATED FACILITY BUDGET

A. Building identification: \_\_\_\_\_  
(if more than one structure)

B. Budget Line	C. New construction	D. Other (identify)	E. Total
1. Building work			
a. General construction	\$ 9,141,530	\$ ---	\$ 9,141,530
b. Plumbing	1,191,070	---	1,191,070
c. Heating, air cond., ventilation	2,392,730	---	2,392,730
d. Electrical work	1,422,400	---	1,422,400
e. Elevators	315,940	---	315,940
f. Other building work (attach list and itemization of costs)	11,000	---	11,000
g. TOTAL FOR BUILDING WORK	14,474,670	---	14,474,670
2. Site work			
a. Site preparation	3,000	---	3,000
b. Site development and parking facilities	165,000	---	165,000
c. Utility connecting lines	51,000	---	51,000
d. Special use items	---	---	---
e. TOTAL FOR SITE WORK	219,000	---	219,000

ESTIMATED FACILITY BUDGET (Cont'd.)

B. Budget Line	C. New construction	D. Other (identify)	E. Total
3. Off-site work			
a. Connecting lines to central utility plant	\$	\$	\$
b. Other items (list and itemize costs)			
c. TOTAL FOR OFF-SITE WORK			
4. Central utility plant (prorata share for this structure)	239,817	---	239,817
5. TOTAL-CONSTRUCTION COSTS	14,933,487	---	14,933,487
6. Built-in equipment	<del>824,030</del> 15,757,517	---	824,030
7. Architectural and engineering costs			
a. Architect's basic fee	1,130,139	(incl. 60,000 retainer)	1,130,139
b. Supervision and inspection (project representative)	1440 191,096	---	191,096
c. Surveys, tests, and borings	37,000	---	37,000
d. Other items (list and itemize costs)	60,000	---	60,000
e. TOTAL-ARCHITECTURAL AND ENGINEERING COST	1,418,235	---	1,418,235

ESTIMATED FACILITY BUDGET (Cont'd.)

B. Budget Line	C. New construction	D. Other (Identify)	E. Total
8. Movable equipment	\$ 2,293,155	---	\$ 2,293,155
9. TOTAL COST FOR CONSTRUCTION FIXED EQUIP. A/E FEES AND MOVABLE EQUIPMENT	19,468,907	---	19,468,907
10. Contingency	458,631	---	458,631
11. Purchase of Land	1,021,400	---	1,021,400
12. Purchase of Buildings			
13. Other (list and itemize)			
14. Subtotal-Lines 9 to 13 incl.			
15. Works of Art			
16. TOTAL DEVELOPMENT COST	\$ 20,948,933	\$ ---	\$ 20,948,938



F. SPACE ALLOCATION BY GRANT PROGRAM

A. Building identification (if more than one structure) \_\_\_\_\_  
 B. Gross area in facility 213,039 S.F. C. Net area in facility 111,584 S.F.

	GRANT PROGRAMS				APPLICANT SPACE
	1) PROGRAM CODE	2) PROGRAM CODE	3) PROGRAM CODE	4) PROGRAM CODE	
Alternate I					
D. Net area by program(s)	56,384 SF	37,457 SF			17,779 SF
E. Cost allocation ratio by programs (D/C, N 100-to two decimals)	50 %	34 %			16 %
Alternate II					
F. Gross area by program(s)	SF	SF	SF	SF	S
G. Cost allocation ratio by programs (E/B, N 100-to two decimals)	%	%	%	%	%

**18. COSTS ELIGIBLE FOR FEDERAL PARTICIPATION  
(BY PROGRAM)**

A. Budget line	B. Total cost (col. E, item 16)	C. Total eligible cost	D. Amounts eligible for Federal participation <i>Phar on</i> <i>Ne</i> (for each grant program)			
			1) Program code <i>41</i> , <i>50</i> % from item 17E <input checked="" type="checkbox"/> or 17G <input type="checkbox"/>	2) Program code <i>43</i> , <i>34</i> % from item 17E <input checked="" type="checkbox"/> or 17G <input type="checkbox"/>	3) Program code ____, ____ % from item 17E ____ or 17G ____	4) Program code ____, ____ % from item 17E ____ or 17G ____
1g. Building work	\$ 14,474,670	\$ 14,474,670	\$ 7,237,335	\$ 4,921,388	\$	\$
2e. Site work	219,000	133,508	66,754	45,393		
3c. Off-site work	---	---	---	---		
4. Central utility plant	239,817	239,817	119,908	81,538		
6. Fixed equipment	824,030	824,030	412,015	280,170		
7e. A/E costs	1,418,235	871,235	435,617	296,220		
8. Movable equipment	2,293,155	2,293,155	1,146,577	779,673		
10. Contingency	458,631	458,631	229,315	155,935		
11. Purchase of Land	1,021,400	---	---	---		
12. Purchases of Building(s)						
13. Other						
15. Works of Art						
16. TOTALS (1g. through 15)	\$ 20,948,938	\$ 19,295,046	\$ 9,647,521	\$ 6,560,317	\$	\$
17. Amount of Fed. Assist Requested			\$ 4,823,761	\$ 4,395,412	\$ 9,219,178	\$
18. Fed. Share Request- Percentage			50%	67%	%	

PRELIMINARY - NOT RESOLVED

July 29/77

Unit F Movable equipment/furnishings Budget

Nursing Share —	\$ 779,673
Pharmacy Share —	\$ 1,146,577
Graphics	40,000
Plants & Drapes	25,000
Uniforms	80,000
Telephones	30,000
Housekeeping	30,000
Shared Overhead Cost	130,000
Contingency	60,000
Environmental Rooms. (part of construction cost)	
Shared Sem's/classrooms	60,000
	<hr/>
Total Movable equipment/furnishings	<u>2,293,155</u>

July 29/77

Unit F Movable equipment / furnishings budget

Nursing Share	— \$ 779,673	652,499
Pharmacy Share	— \$ 1,146,577	<u>1,146,577</u>
	1,926,250	1,799,076
Graphics	40,000	
Blinds & Drapes	25,000	
Upholstery	80,000	
Telephones	30,000	
Housekeeping	30,000	
Shared Overhead Cost	130,000 x	
Contingency	60,000 x	
Environmental Rooms. (part of construction cost)		
Shared Sem's / classrooms	60,000	
	455,000	<u>438,222</u>
Total Movable equipment / furnishings	<u>2,293,155</u>	(-16,778)
	2,381,250	(-88,095)

↓ 494,079

16. BUDGET INFORMATION  
ESTIMATED FACILITY BUDGET

A. Building identification: \_\_\_\_\_  
(if more than one structure)

B. Budget Line	C. New construction	D. Other (identify)	E. Total
1. Building work			
a. General construction	\$ 9,141,530	\$ ---	\$ 9,141,530
b. Plumbing	1,191,070	---	1,191,070
c. Heating, air cond., ventilation	2,392,730	---	2,392,730
d. Electrical work	1,422,400	---	1,422,400
e. Elevators	315,940	---	315,940
f. Other building work (attach list and itemization of costs)	11,000	---	11,000
g. TOTAL FOR BUILDING WORK	14,474,670	---	14,474,670
2. Site work			
a. Site preparation	3,000	---	3,000
b. Site development and parking facilities	165,000	---	165,000
c. Utility connecting lines	51,000	---	51,000
d. Special use items	---	---	---
e. TOTAL FOR SITE WORK	219,000	---	219,000

ESTIMATED FACILITY BUDGET (Cont'd.)

B. Budget Line	C. New construction	D. Other (identify)	E. Total
3. Off-site work			
a. Connecting lines to central utility plant	\$	\$	\$
b. Other items (list and itemize costs)			
c. TOTAL FOR OFF-SITE WORK			
∞ 4. Central utility plant (prorata share for this structure)	239,817	---	239,817
5. TOTAL-CONSTRUCTION COSTS	14,933,487	---	14,933,487
6. Built-in equipment	824,030	---	824,030
7. Architectural and engineering costs			
a. Architect's basic fee	1,130,139		1,130,139
b. Supervision and inspection (project representative)	191,096	---	191,096
c. Surveys, tests, and borings	37,000	---	37,000
d. Other items (list and itemize costs)	60,000	---	60,000
e. TOTAL-ARCHITECTURAL AND ENGINEERING COST	1,418,235	---	1,418,235

## ESTIMATED FACILITY BUDGET (Cont'd.)

B. Budget Line	C. New construction	D. Other (Identify)	E. Total
8. Movable equipment	\$ 2,293,155	\$ ---	\$ 2,293,155
9. TOTAL COST FOR CONSTRUCTION FIXED EQUIP. A/E FEES AND MOVABLE EQUIPMENT	19,468,907	---	19,468,907
10. Contingency	458,631	---	458,631
11. Purchase of Land	1,021,400	---	1,021,400
12. Purchase of Buildings			
13. Other (list and itemize)			
14. Subtotal-Lines 9 to 13 incl.			
15. Works of Art			
16. TOTAL DEVELOPMENT COST	\$ 20,948,938	\$ ---	\$ 20,948,938

17. SPACE ALLOCATION BY GRANT PROGRAM

A. Building identification (if more than one structure) _____					
B. Gross area in facility _____ 213,039 _____ S.F.		C. Net area in facility _____ 111,584 _____ S.F.			
Alternate I	GRANT PROGRAMS				APPLICANT SPACE
	1) 41 PROGRAM CODE	2) 43 PROGRAM CODE	3) PROGRAM CODE	4) PROGRAM CODE	
D. Net area by program(s)	56,384 SF	37,457 SF	SF	SF	17,743 SF
E. Cost allocation ratio by programs (D/C X 100—to two decimals)	50 %	34 %	%	%	16 %
Alternate II					
F. Gross area by program(s)	111,0 SF	17,0 SF	SF	SF	SF
G. Cost allocation ratio by programs (F/B X 100—to two decimals)	%	%	%	%	%





18. COSTS ELIGIBLE FOR FEDERAL PARTICIPATION  
(BY PROGRAM)

A. Budget line	B. Total cost (col. E, item 16)	C. Total eligible cost	D. Amounts eligible for Federal participation (for each grant program)			
			1) Program code 41 _____ 50 _____ %	2) Program code 43 _____ 34 _____ %	3) Program code _____ _____ %	4) Program code _____ _____ %
			from item 17E <del>X</del> or 17G _____	from item 17E <del>X</del> or 17G _____	from item 17E _____ or 17G _____	from item 17E _____ or 17G _____
1g. Building work	\$ 14,474,670	\$ 14,474,670	\$ 7,237,335	\$ 4,921,388	\$	\$
2e. Site work	219,000	133,508	66,754	45,393		
3c. Off-site work	---	---	---	---		
4. Central utility plant	239,817	239,817	119,908	81,538		
6. Fixed equipment	824,030	824,030	412,015	280,170		
7e. A/E costs	1,418,235	871,235	435,617	296,220		
8. Movable equipment	2,293,155	2,293,155	1,146,577	779,673		
10. Contingency	458,631	458,631	229,315	155,935		
11. Purchase of Land	1,021,400	---	---	---		
12. Purchases of Building(s)						
13. Other						
15. Works of Art			176 12*	176 12*		
16. TOTALS (1g. through 15)	\$ 20,948,938	\$ 19,295,046	\$ 9,647,521	\$ 6,560,317	\$ 16,207,828	\$
17. Amount of Fed. Assist Requested			4,283,811 \$ 4,823,761	4,976,557 \$ 4,395,412	\$	\$
18. Fed. Share Request— Percentage			50%	67%		%

11



"The Mechanism of Alkylation of DNA by 5-(3-methyl-1-triazeno)imidazole-4-carboxamide (MIC), a Metabolite of DIC (NSC-45388). Non-involvement of Diazomethane." H. T. Nagasawa (with F. N. Shirota and N. S. Mizuno), Chem.-Biol. Interactions, 3:403-413 (1973).

"Acetaldehyde Metabolism by the Rat Heart," H. T. Nagasawa, (with G. W. Forsyth and C. S. Alexander), Proc. Soc. Exp. Biol. Med., 144:498-500 (1973).

"2-Aminoadamantane-2-carboxylic Acid, a Rigid, Achiral, Tricyclic  $\alpha$ -Amino Acid with Transport Inhibitory Properties," H. T. Nagasawa, (with J. A. Elberling and F. N. Shirota), J. Med. Chem., 16:823-826 (1973).

"A New Method for Nitrosation of Proline and Related Secondary- $\alpha$ -amino Acids to N-Nitrosamino Acids with Possible Oncogenic Activity," H. T. Nagasawa, (with P. S. Fraser and D. L. Yuzon), J. Med. Chem., 16:583-585 (1973).

Medicinal Chemistry - Dr. Philip S. Portoghese, Professor and Head,  
Director of Graduate Studies in Medicinal Chemistry

Stereochemistry and conformational analysis of biologically active compounds. Investigation of the relationship between stereochemistry and activity. Design and synthesis of new medicinal agents. Biophysical and biochemical investigation of receptor mechanisms. Metabolism and distribution studies. Inhibitors of prostaglandin biosynthesis.

#### Selected Publications

"Potential Nonequilibrium Analgetic Receptor Inactivators. Further Pharmacologic Studies of N-Acylanileridines," P. S. Portoghese, (with A. E. Takemori, A. Ward and V. G. Telang) J. Med. Chem., 17:1051 (1974).

"Stereochemical Studies on Medicinal Agents. 18. Absolute Configuration and Analgetic Potency of Trimeperidine Enantiomers," P. S. Portoghese, (with D. Fries), J. Med. Chem., 17:129 (1974).

"Stereochemical Studies on Medicinal Agents. 11. Metabolism and Distribution of Proline Isomers in Mice," P. S. Portoghese, (with M. M. Abdel-Monem, D. L. Larson and H. J. Kupferberg), J. Med. Chem., 15:494 (1972).

"Stereochemical Studies on Medicinal Agents. 15. The Absolute Configurations of Enantiomeric Diastereomers of 3-Allyl-1-Methyl-4-phenyl-4-propionyloxy-piperidine," P. S. Portoghese, (with K. H. Bell), J. Med. Chem. 16:589 (1973).

"Stereochemical Studies on Medicinal Agents. 10. The Role of Chirality in  $\alpha$ -Adrenergic Receptor Blockade by (+) and (-)-Phenoxybenzamine Hydrochloride," P. S. Portoghese, (with T. N. Riley and J. W. Miller), J. Med. Chem. 14:561 (1971).

Medicinal Chemistry - Dr. Taira O. Soine, Professor and Assistant Dean,  
Graduate Studies and Research

Studies involving isolation, purification, structure elucidation and synthesis of a variety of natural products are being carried out for the purpose of obtaining leads toward potentially useful biologically active agents. Studies have involved mainly alkaloids and naturally-occurring coumarins. Structure-activity relationships of active compounds are explored by means of suitable synthetic congeners.

#### Selected Publications

"Preparation and Curarimimetic Activity of (+)-Isotubocurarine," T. O. Soine, (with J. Naghaway), J. Pharm. Sci., 63:1643 (1974).

"Natural Coumarins VII. Isolation and Constitution of a New Coumarin, Peuruthenicin, from Peucedanum ruthenicum M. B.," T. O. Soine (with A. Zheleva, M. M. Mahandru, P. Erhardt and L. Bubeva-Ivanova), J. Pharm. Sci., 62:1897 (1973).

"Coumarins XII. Synthesis of (T)-Cis- and Trans-3',4'-dihydroxy-3',4'-dihydroxanthyletin and Some of Their Diesters," T. O. Soine, (with S. M. El-Antably), J. Pharm. Sci., 62:1643 (1973).

"Natural Coumarins V. Isolation of Xanthalin and a New Pyranocoumarin, Peuarenine, from Peucedanum arenarium W. K.," T. O. Soine, (with A. Zheleva and L. Bubeva-Ivanova), J. Pharm. Sci., 61:1643 (1972).

"Synthesis and Certain NMR Spectral Characteristics of Bisnorargemonine Isomers," T. O. Soine, (with C. E. Chen), J. Pharm. Sci., 61:55 (1972).

Medicinal Chemistry - Dr. Robert Vince, Associate Professor

Design, synthesis, and biological evaluation of antitumor agents; mechanism of action of antibiotics. Inhibitors of protein synthesis.

#### Selected Publications

"Purocytin Analogs. Ribosomal Binding and Peptidyl Transferase Substrate Activity of a Carbocyclic Analog of 3-Azapuromycin," R. Vince, (with P. Dugnette and C. Ritter), Biochem., 13:4855 (1974).

"The Formation of Arabino Nucleosides from 3-Acetamido-1,2-di-O-Acetyl-3,5-Dideoxy-D-Ribofuranose during the Fusion Synthesis," R. Vince, (with R. Almquist), Carb. Res., 36:214 (1974).

"Purocytin Analogs. Studies on Ribosomal Binding with Diastereomeric Carbocyclic Purocytin Analogs," R. Vince (with S. Daluge), J. Med. Chem., 17:578 (1974).

"Paromycin Analogs. The Synthesis and Biological Activity of 5'-Desoxyparomycin and its Aminonucleoside," R. Vince (with R. Almquist), J. Med. Chem., 16:1396 (1973).

"Glutaryl-S-(p-bromobenzyl)-L-cysteinylglycine. A Metabolically Stable Inhibitor of Glyoxalase I," R. Vince, (with M. Wolf, and C. Sanford), J. Med. Chem., 16:951 (1973).

## PHARMACEUTICS

Pharmaceutics is concerned with the elucidation, analysis, and means of control of the physical chemical properties of the drug and its dosage forms as they influence its availability to the site of action in the living organism. Such studies include the investigation of the functional relationships existing between tissue or body fluid concentrations of drugs or related compounds and the rates or mechanisms of their absorption, distribution, metabolism, excretion, and pharmacological activity. Thus the area is broad, offering specialization ranging from highly physical to strongly biological orientations.

### GRADUATE PROGRAM IN PHARMACEUTICS

The Pharmaceutics Department at the College of Pharmacy, University of Minnesota, presents a comprehensive program of coursework and research offerings leading to the M.S. and Ph.D. degrees. A basic background in the physical and biological sciences is provided as a firm foundation for the study of modern pharmaceutics. The broad scope of the program affords the student an exceptional opportunity to elect a course of study which best meets his individual needs and interests. Minor fields which are particularly desirable include physical chemistry, chemical engineering, biochemistry, and pharmacology.

Specific research interests of faculty members in this department are listed below:

Pharmaceutics - Dr. Edward G. Rippie, Professor and Head, Director of Graduate Studies in Pharmaceutics

Current research includes investigations regarding the mechanics and mechanisms of the segregation or demixing phenomena observed in systems of particulate solids. These studies include the experimental determination of relative and absolute rates of mixing and segregation in multiparticulate systems subjected to vibration or shear, as well as the theoretical interpretation of the observations.

Research interests also include the chemical activity and reactivity of molecules within anisotropic liquid systems. Such systems are under study with regard to the thermodynamic and steric contribution of the

solvent to the observed solute behavior.

#### Selected Publications

"Nematic-Isotropic Solution Thermodynamics in Di(p-methoxyphenyl)-trans-cyclohexane-1,4-dicarboxylate," E. G. Rippie (with H. G. Ibrahim), accepted for publication in *Thermochimica Acta*.

"Esters of Bicyclic Aminoalcohols V: Duration of Corneal Anesthesia vs. Enzymatic Hydrolytic Rate of Benzoates of 1-,2-, and 3-Methyl-2-hydroxyquinolizidines," E. G. Rippie (with M. A. Zoglio and T. O. Soine) J. Pharm. Sci., 60:411 (1970).

"Hydrolysis of Procaine and Its Quaternary Derivatives within Lyotropic Smectic Mesophases," E. G. Rippie, (with K. S. Murthy), J. Pharm. Sci., 59:459 (1970).

"Regulation of Dissolution Rate by Pellet Geometry," E. G. Rippie (with J. R. Johnson), J. Pharm. Sci. 58:428 (1969).

"Segregation Kinetics of Particulate Solids Systems IV. Effect of Particle Shape on Energy Requirements," E. G. Rippie, (with M. D. Faiman and M. K. Pramoda) J. Pharm. Sci., 56:1523 (1967).

Physical and Chemical Stabilization of Pharmaceutical Systems - Dr. John D. McRae, Associate Professor

The systematic examination of pharmaceutical systems of interest, using physico-chemical knowledge, to elucidate causes of chemical and/or physical stability problems and the prevention or minimization of these problems.

#### Selected Publications

"Catalysis of Anhydride Formation in Aqueous Solutions of Dicarboxylic Acids," J. D. McRae (with T. Higuchi and A. C. Shah) J.A.C.S., 88:4015 (1966).

Pharmaceutics - Dr. Kenneth G. Nelson, Associate Professor

Research interests are generally in the area of diffusion and transport phenomena in pharmaceutical systems. Current activity centers around diffusional behavior of drugs in solutions of hydrophilic colloids, dissolution rates, and the mechanism of the reaction of fluoride salts with synthetic tooth mineral, hydroxyapatite.

Selected Publications

"Determination of the Stability Constants of Stannous Fluoride Complexes by Potentiostatic Titration," K. G. Nelson, (with K. N. Amin), J. Pharm. Sci., in press.

"Effects of Polyelectrolytes on Drug Transport I: Diffusion," K. G. Nelson, (with K. F. Farnig), J. Pharm. Sci., 62:1435 (1973).

" $\text{SnHPO}_4$  from the Reaction of Stannous Fluoride and Hydroxyapatite at Low pH," K. G. Nelson, (with C. A. Bainbridge), J. Dent. Res., 52:318 (1973).

"The Helwin Equation and Solubility of Small Particles," K. G. Nelson, J. Pharm. Sci., 61:479 (1972).

"Mechanism of Fluoride Uptake by Hydroxyapatite from Acidic Fluoride Solutions," K. G. Nelson, (with W. I. Higuchi) J. Dent. Res., 49:1541 (1970).

Biopharmaceutics - Dr. Kenneth W. Miller, Associate Professor

Interests include the absorption, distribution, metabolism and excretion of drugs in animals and man. Current interest includes the effect of dosage form design on the bioavailability of aminophylline and diphenylhydantoin.

Selected Publications

"Effect of Triton X-100 on the Conjugation of Tetrahydrocortisone, In Vitro," K. W. Miller, (with E. C. Heath, K. H. Easton and J. V. Dingell), Biochem., Pharmacol., 22:2319 (1973).

"The Intracellular Localization of  $\Delta^9$ -Tetrahydrocannabinol in Liver and its Effects on Drug Metabolism In Vitro," K. W. Miller, (with J. V. Dingell, E. C. Heath and H. A. Klausner), Biochem. Pharmacol., 22:949 (1973).

"The Interaction of Drugs with the Conjugation of Tetrahydrocortisone and a Method for the Measurement of the Formation of its Glucuronide, In Vitro," K. W. Miller, (with J. V. Dingell), J. Pharmacol. Exptl. Therap., 173:602 (1971).

"p-Chloramphetamine-Species Differences in the Rate of Disappearance and the Lowering of Cerebral Serotonin," K. W. Miller, (with E. Sanders-Bush and J. V. Dingell), Biochem. Pharmacol., 20:500 (1971).

"On the Mechanism of Amphetamine Potentiation by Iprindole," K. W. Miller, (with J. J. Freeman, J. V. Dingell and F. Sulser), Experientia, 26:863 (1970).



BioPharmaceutics - Dr. Ronald J. Sawchuk, Assistant Professor

Interests are in general in the area of kinetics of drug absorption and disposition in laboratory animals and humans. Particular interests include the assessment of bioavailability of drug dosage forms. Current research activities are directed toward the investigation and disposition at steady state.

#### Selected Publications

"Mixed First-order and Capacity-limited Elimination of 4-Aminoantipyrine in the Rabbit under Steady-State Conditions," R. J. Sawchuk, (with T. N. Tozer), Fifth International Congress of Pharmacology, Abstracts of Volunteer Papers, p. 202, July 1972.

"Stirring Apparatus for the Investigation of Unstable Strongly Adsorbing Chemicals," R. J. Sawchuk, (with J. M. Anderson and J. G. Nairn) J. Pharm. Sci., 55:1463 (1966).

"Rate Studies on the Binding of Bilirubin by Ion-Exchange Resins," R. J. Sawchuk, (with J. G. Nairn) J. Pharm. Sci., 57:1896 (1968).

#### PHARMACOGNOSY

Pharmacognosy is a biological science concerned with obtaining medicinals from nature and understanding how and why nature produces them. Medicinals from highly diversified biological systems such as animals, insects, marine life, microorganisms, plants or tissue cultures may be studied.

#### GRADUATE PROGRAM IN PHARMACOGNOSY

The Pharmacognosy Department at the College of Pharmacy, University of Minnesota, presents a comprehensive program of coursework and research offerings leading to the M.S. and Ph.D. degrees. The program provides an opportunity to study the medicinals in biological systems from any one of the following three perspectives: biochemical (product biosynthesis, isolation and identification), botanical (chemotaxonomy, ethnobotanical, growth and physiology), and microbiological (antibiotics, biotransformations, immunology, tumor antigens). Because of the multidisciplinary nature of pharmacognosy, each student's program will be constructed to meet his specialized needs and interests. In addition to the coursework offered within the Pharmacognosy Department, the student may also be engaged in interdisciplinary studies with other University departments such as biochemistry, botany, microbiology, medicinal chemistry, and pharmacology.

Each student conducts original research under the supervision of a staff member who is selected by the student within one year of his matriculation. Such research is directed toward the development of the M.S. or Ph.D. thesis and is of central importance in the training of the candidate. Current research in the Pharmacognosy Department is concerned with the growth, physiology, and biosynthesis of medicinals in higher plants; the use of multi-liter plant suspension cultures for the biosynthesis or biotransformation of medicinals; the development of antitumor agents; and the biotransformation of steroids in animal and microbial systems.

Specific research interests of faculty members in this department are listed below:

Medicinal Plant Tissue Culture - Dr. E. John Staba, Professor and Head, Director of Graduate Studies in Pharmacognosy

A study of free cells and differentiated tissues derived from medicinal plants for their ability to biosynthesize and biotransform alkaloids, antibiotics, cardenolides, hallucinogens, steroids, etc. The biological systems examined are aseptic, continuously subcultured, and grown as suspensions in either Erlenmeyer flasks or pilot-scale fermentors. Of further interest and study are the constituents and pharmacology of medicinal plants such as ginseng.

Selected Publications

"Lipids in Plant Tissue Cultures. II. Unusual Fatty Acids in Lipids of Echinocarpus anthelminticus Cultures," E. J. Staba, (with F. Spener and E. K. Mangold), Chem. Phys. Lipids, 12:344-350 (1974).

"Aquatic Plants from Minnesota, V. Digestibility and Fermentation of Aquatic Plants," E. J. Staba, (with J. G. Linn and R. D. Goodrich), Bulletin No. 70, Water Resources Research Center, University of Minnesota, (1974).

"American and Korean Ginseng Tissue Cultures: Growth, Chemical Analysis, and Plantlet Production," E. J. Staba, (with J. J. Jhang and J. Y. Kim) In Vitro, 2:253-259, (1974).

"Allergens from Short Ragweed Leaf Tissue Cultures," E. J. Staba, (with A. Shafiee), In Vitro, 9:19-23 (1973).

"Studies on the Ginseng Plants (I) Saponins and Sapogenins from American Ginseng Plants." E. J. Staba, (with J. Y. Kim), Kor. J. Pharmacognosy, 4:198-203 (1973).

Mechanisms of Steroid Metabolism and Transformation - Dr. Yusuf Abul-Hajj,  
Associate Professor

A study of the stereochemistry and mechanism of enzymic hydrogenation and dehydrogenation reactions is currently under investigation. Another area of investigation is the microbial transformation of steroids and alkaloids. Other areas of interest include a comparative study of the rates of enzymic hydrogenation reaction in the liver and hepatoma, steric aspects of catalytic hydrogenation and isolation of antibiotics from fungi, and the development of diagnostic procedures for the differentiation between hormone-dependent and hormone-independent breast tumors.

Selected Publications

"Partial Purification of Antigen E from a mixture of stems and leaves of Short Ragweed Plant," Y. J. Abul-Hajj, (with A. Shaffiee and E. J. Staba), J. Pharm. Sci. (In press).

"Antimicrobial Effects of Aquatic Plants from Minnesota," Y. J. Abul-Hajj, (with K. L. Su and E. J. Staba), Lloydia, 36:80 (1973).

"Preliminary Chemical Studies of Aquatic Plants from Minnesota," Y. U. Abul-Hajj, (with E. L. Sue and E. J. Staba), Lloydia, 36:72 (1973).

"Stereochemistry of C-1,2-Dehydrogenation of 5 $\beta$ -Pregnane-3, 11, 20-trione by Septomyxa affinis," Y. J. Abul-Hajj, J. Biol. Chem., 247, 686 (1973).

"Stereospecificity of Hydrogen Transfer from NADPH by Steroid  $\Delta^4$ -5 $\alpha$ - and  $\Delta^4$ -5 $\beta$ -Reductase," Y. J. Abul-Hajj, Steroids, 20:215 (1972).

Immunology - Dr. Orval Mullen, Assistant Professor

Of current interest is isolation and characterization of tumor transplantation antigen from tumor tissue, tissue culture and freeze storage of animal cells, and in vivo and in vitro assay of the cellular immune response. An additional area of interest is in the application of immunological techniques such as radioimmunoassay and fluorescent microscopy to the field of pharmacology.

Selected Publications

"Evaluation of Dye Exclusion and Colony Inhibition Techniques for Detection of Polyoma-Specific, Cell-Mediated Immunity," O. L. Mullen, (with M. C. Dodd and J. P. Minton), U. S. Nat'l. Cancer Inst., January, 1975.

"The Immunizing Biologicals," O. L. Mullen, Minnesota Pharmacist, 27(11):3, (1973).

"Specific Immunocompetence of Mouse Spleen Cells for Polyoma Transplant Antigen," O. L. Mullen (with M. C. Dodd), J.R.E.S., 11(4):409, (1972).

## PHARMACY ADMINISTRATION

Pharmacy Administration examines the social, economic, psychological and political aspects of the organization and distribution of drugs and pharmaceutical services; the use, abuse and non-use of drugs and drug information by patients and practitioners; and the role of the pharmacist as a health practitioner in relation to the public, his profession and other health practitioners.

The widespread use and dependency on drugs and drug products in today's society coupled with an increased utilization and application of pharmaceutical services has created a need for individuals who can study the social, psychosocial, political, legal, historical and economic factors that impinge upon the use.

### GRADUATE PROGRAM IN PHARMACY ADMINISTRATION

This graduate program is designed for the graduate who is looking for an education and experience quite unlike the physical and biologically oriented undergraduate program in pharmacy. Rather, the program fosters the application of behavior-oriented interdisciplinary theories to pharmacy problem solving and pharmacy system development. A flexible program leading to the M.S. and Ph.D. degrees is available. Close cooperation is maintained with joint programs in the social and behavioral science departments and with the other health science school.

Specific research interests of faculty members in the department are listed below:

Pharmacy Administration - Dr. Albert I. Wertheimer, Associate Professor, Director of Graduate Studies in Pharmacy Administration

Studies encompass the socioeconomics of the drug use process and organization and delivery studies on the role of pharmacy in the health care delivery system.

#### Selected Publications

"The Past and Potential of Clinical Pharmacy," A. I. Wertheimer (with J. E. Knobler), The Apothecary, 86, No. 2, 10, February 1974.

"Professional Services--Some Necessary Distinctions," A. I. Wertheimer, Journal of the American Pharmaceutical Association, NS12, No. 5- 260 (May 1973).

"Prescription Accuracy: Room for Improvement," A. I. Wertheimer, (with C. Rutchko and D. W. Dougherty) Medical Care, 11, No. 1, 68-71 (January-February, 1973).

"Generic Drug Pricing," A. I. Wertheimer, Drug and Cosmetic Industry, 107, 4, 52 (October, 1970).

"Patent Licensing of Pharmaceuticals," A. I. Wertheimer, (with R. V. Evanson), Inquiry, VII, 3, 69 (September, 1970).

Pharmacy Administration - Dr. Hugh F. Kabat, Professor, Assistant Dean

Patient compliance studies; job satisfaction studies; drug distribution; patient consultation studies; drug utilization review studies; role definition of extended roles for pharmacists and drug induced modification of laboratory test values.

#### Selected Publications

"A Client Developed Methadone Maintenance Program," H. F. Kabat (with R. Levine) Internat. J. Of the Addictions, Vol. 10, No. 5, 1974.

"Blood Pressure Screening in Community Pharmacies," H. F. Kabat (with M. Hammel), J. Amer. Pharm. Assoc. NSL (4): pp. 196-197 (Apr.) 1974.

"Assessing Employee Job Attitudes," H. F. Kabat (with M. Hanson) Amer. J. Hosp. Pharm., 31:269-271 (Feb.) 1974.

"Drug Induced Modifications of Laboratory Test Values," H. F. Kabat, (with M. P. Elking) Laboratory Medicine, Race, G. J. Ed. Vol. 1, Chapter 14, pp. 1-59 1973.

Social Psychology - Carl A. Johnson, Ph.D.

Decision process and risk taking behavior, small group processes, personal control, drug and placebo response.

#### Selected Publications

"The Experience of Duration as a Function of Complexity of Visual Stimuli Briefly Presented," C. A. Johnson (with C. Anderson, M. E. Kinsbourne and T. Hines), in preparation.

"An Attribution of Personal Control Model for the Experience of Pain and Placebo Effects," C. Johnson (with C. Anderson), Paper submitted for presentation at the 1st International Congress on Patient Counseling in Amsterdam, May 1975.

"The Effects of Personal Control on Expectations for Environmental Contingencies," C. Johnson (with C. Anderson) Submitted to the Journal of Personality and Social Psychology, August 1974.

"Personal Control and Privacy," C. Johnson (with C. Anderson), In S. Margulis (Ed.), Privacy Coming of Age, Chapel Hill: EDRA, 1974.

"Delay of Consequences and The Riskiness of Decisions," C. Johnson (with E. E. Jones and C. Anderson), Journal of Personality, December 1973.

Pharmacology - Lawrence C. Weaver, Professor, Dean

Health care delivery systems, continuing competency and professional education.

#### Selected Publications

"Continuing Education, An Opportunity," L. C. Weaver, Am. J. Pharmacy.

"Accreditation in Pharmaceutical Education," L. C. Weaver, (with T. M. McKennel), Am. J. Hosp. Pharm.

"Clinical Pharmacy Concerns," L. C. Weaver, Am. J. Pharm. Ed., 37:536, 1973.

"Address of the Vice President: Shouldn't We Try?" L. C. Weaver, Am. J. Pharm. Ed., 37:395, 1973.

"ACCP Reorganization," L. C. Weaver, Am. J. Pharm. Ed., 37:349, 1973.

"Learning--A New Approach to Pharmacy Education," L. C. Weaver, Pharmacopa, 12:5, 1973.

Medical Sociology - Theodor J. Litman

Health care organization and social, psychological aspects of dealing with the treatment process.

#### Selected Publications

"Comparative Analysis of Health Care Systems - A Holistic Approach," T. J. Litman (with D. Robins) Institute of Interdisciplinary Studies, American Rehabilitation Foundation, International Conference on Health Planning, May 19-21, 1970, Northstar Inn, Minneapolis, Minnesota, Social Sciences and Medicine, January, 1972.

"Health Care and the Family - An Intergenerational Analysis," T. J. Litman, Medical Care, September, 1970.

"The Uneasy Equilibrium, T. J. Litman (with G. Anderson) Sociological Quarterly, 1969-1970.

"Medical Care", T. J. Litman (with R. Scott and E. Volkart), Medical Care, November, 1967.

"Sociology and Rehabilitation," T. J. Litman, (with M. Sussman), Sociological Review, Fall, 1967.

"Health Process in the United State 1900-1960," T. J. Litman (with M. Lerner and I. Anderson, Sociological Quarterly, Summer, 1966.

Appendix B

- Letter of certification  
for a Clinical Pharmacokinetics  
Laboratory





DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

REGION V  
300 SOUTH WACKER DRIVE  
CHICAGO, ILLINOIS 60606

SOCIAL SECURITY ADMINISTRATION

March 5, 1975

Refer to: HI:S7  
Provider Number: 24-8031

Kenneth W. Miller, Ph.D.  
Director  
Clinical Pharmacokinetics Laboratory  
College of Pharmacy - University of Minnesota  
Minneapolis, Minnesota 55455

Dear Dr. Miller:

We are pleased to inform you that your laboratory meets the requirements for coverage of its services under the Medicare program (Title XVIII of the Social Security Act). Your laboratory is approved for tests and procedures as indicated on the enclosed list.

Your laboratory has been assigned the identification number shown above. The number should be entered on all forms and correspondence relating to the Medicare Program.

The State Agency advised you of certain deficiencies which were noted during the survey of your laboratory. Your continued approval in certain or all of the specialties on the enclosed list is conditional on your correction of these deficiencies. We have reviewed the plan and timetable for correction of these deficiencies which you submitted and will be in close touch with the State Agency to assure that appropriate steps are taken. The State Agency will be pleased to furnish any consultation you may need. You should also report to the State Agency any changes in staffing, services, or other characteristics which might affect your certification status.

We welcome your participation and look forward to working with you in the administration of the Medicare Program.

Sincerely yours,

James R. Salla  
Program Officer  
State Operations Branch  
Health Insurance

Enclosure

Appendix C

-- A GUIDE TO UNIVERSITY  
OF MINNESOTA ACTIVITIES  
IN RESPONSE TO THE  
PROBLEMS OF CHEMICAL  
MISUSE AND ABUSE  
Drug Information and  
Education Program  
College of Pharmacy

A Guide to  
University of Minnesota Activities  
in Response to the Problems of

# Chemical Misuse and Abuse

Compiled by:

Drug Information and Education Program  
N620 Elliott Hall  
University of Minnesota  
Minneapolis, Minnesota 55455  
(612) 376-3150

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# Introduction

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For many years, individuals from the numerous campuses, colleges, and departments throughout the University of Minnesota have been active in providing services, conducting research and developing curricula directed toward alleviating problems connected with chemical misuse and abuse (alcohol, tobacco, caffeine, prescription drugs and illicit substances). The impact of these efforts has been minimized as a result of duplication of effort and lack of coordination between and amongst University personnel. Since 1973, the Drug Information and Education Program has been involved in facilitating communication and conveying community needs to interdisciplinary groups within the University, which has resulted in the development of responsive programmatic activity. This booklet is provided to help those within and outside the University community to gain access to individuals and programs active in areas relevant to their interests and needs.

## **Drug Information and Education Program**

Lawrence C. Weaver, Ph.D., Director

Marc G. Kurzman, R.Ph., J.D., Associate Director

The Drug Information and Education Program (DIEP) is an administrative office which funds and coordinates research, curricular and service activity related to drug abuse within the University. Pursuant to an agreement between the State Alcohol and Drug Abuse Authority (Drug Authority) and the University, all applications for funding generated within the University related to drug abuse are to be sent to DIEP for review and comment prior to their being funded.

The Drug Authority, created pursuant to federal and state law, is the agency responsible for the development of a Comprehensive State Plan for the distribution of monies to be used in the development of drug abuse prevention functions in the state. "Prevention" is defined as any program or activity relating to drug abuse education, training, treatment, rehabilitation or research. Further, such activities are covered regardless of the identity of the agency conducting them or its primary mission. For example, monies presently being used to fund contracts and/or grants from the

Alcohol, Drug Abuse, and Mental Health Administration will be distributed primarily through a formula grant program directly to the Drug Authority and then redistributed in the state in accordance with the Comprehensive State Plan. DIEP is responsible for preparing the University component of the Comprehensive State Plan.

As community, University and/or federal needs are manifested to DIEP, Program staff draw together resources from numerous departments, colleges and campuses to respond to these needs. Two committees have been established to assist Program staff in their performance of their duties. The Program Advisory Committee includes members from each of the state University campuses and various state agencies involved in activity directed toward alleviating drug abuse problems. The function of the Program Advisory Committee is to serve as a liaison between the University and state agencies so that needs manifested throughout the state can be communicated to the University. The Program Implementation Committee (PIC) is presently open for membership to all members of the University community involved in, or potentially interested in, problems of drug abuse. The function of the PIC is to provide a forum for interchange of ideas and to foster an interdepartmental cooperative response to needs indicated by the Program Advisory Committee. Review and comment on proposals submitted from the University is conducted by the PIC through specialty interest subcommittees which review proposals related to their areas of expertise. Before "review and comment" from DIEP is forwarded to the Drug Authority, the individuals who are involved in the development of the proposal have the benefit of the PIC report so they can make appropriate changes if necessary. Further, the communication network established via the PIC serves as a conduit and catalyst for cooperative efforts as the DIEP staff or others learn of the availability of money and existence of need. The membership of each committee is as follows:

**Program Advisory Committee, representatives from:**

**University of Minnesota**

Twin Cities  
Duluth  
Morris

**State Agencies**

Department of Education  
Department of Health  
Department of Manpower Services  
Department of Public Welfare  
Department of Vocational Rehabilitation

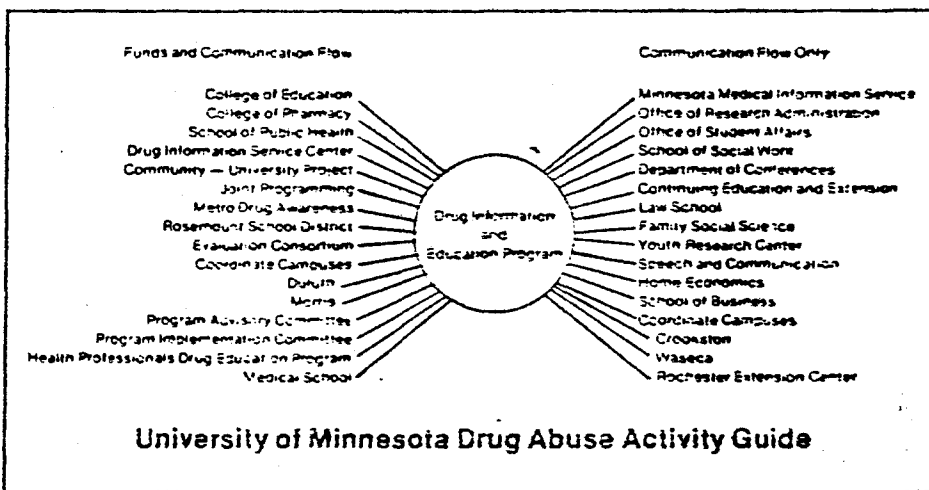
Minneapolis Health Department

Minnesota Drug Assembly (Consortium of Street Agencies)

Minnesota Legislature

Program Implementation Committee, representatives from:

- College of Education
  - Educational Psychology
  - Center for Educational Research and Development
  - Philosophical, Psychological and Sociological Foundations
  - Secondary Education
  - Department of School Health Education
- College of Pharmacy
- Drug Information Service Center
- Family Social Sciences
- Health Professionals Drug Abuse Education Program
- Law School
- Medical School
  - Pharmacology Department
  - Psychiatry Research
  - Psychopharmacology Research and Training Program
- Minnesota Medical Information Service
- Office of Research Administration
- Office of Student Affairs
- School of Business Administration
- School of Public Health
- School of Social Work
- College of Liberal Arts
  - Department of Sociology
- University of Minnesota
  - Duluth
  - Morris
  - Rochester Extension Center





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# Curriculum Activities

Twin Cities Campus

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## College of Pharmacy

**MedC 5494. Instrumentation in Medicinal Chemistry.** Abdel-Monem, Fullerton

Modern approaches to drug analysis. 1974-75 and alternate years — independent study. 1975-76 and alternate years — a series of laboratory exercises and lectures on NMR, MS, high pressure LC, radioimmune assay, use of scintillation counters, forensic toxicology and forensic drug identification, monitoring of drug therapy, drug metabolism, law related to drug analysis, and emergency poison identification.

**Phar 5285. Drugs and Society.** Anthony

"Drugs and Society" is an innovative course of study on drugs, drug use and drug use problems which is offered three times each year through the University's College of Pharmacy and Interdisciplinary "Health Sciences Unattached" Department, and is in part supported by the Drug Information and Education Program. This course — interdisciplinary in its student body as well as its perspectives on drug use — grew out of an earlier course, "Community Drug Education," which prepared pharmacy students for drug education activities, and was stimulated in its growth by "Project SPEED", a National Institutes on Mental Health and Drug Abuse-funded interdisciplinary drug education curriculum development project. Like its predecessor, "Drugs and Society" is directed toward preparing students to be able to answer questions about drugs and drug use, and to participate in drug education and other drug use problem prevention activities.

The course is organized around a well-researched set of goals and objectives such as: "When asked 'What happens when someone takes a drug?' the learner shall recognize that the inquirer may be asking for help in the form of advice about drug use, or in the form of a referral to a counselor or other 'treater', and shall state or identify at least one way of determining whether this is so;" and "When presented with an individual with a drug use problem, the

learner shall demonstrate an empathic, non-judgmental approach toward that individual."

The student is viewed as having a need to understand the "relevance" of the goals and objectives, and as having an individual — and perhaps unique — learning pattern, and the course has a flexibility — not seen in most courses — to address these needs and individual patterns. To this end, the course offers the student a selection of "learning pathways", all directed toward the attainment of the course objectives. Included in these "pathways" are values confrontations, propositional ("what if?") exercises, encounters with a variety of drug users, law enforcement officials, "treaters", lawyers and others involved in drug use problem prevention, treatment and control, as well as other learning strategies.

One inflexible part of the course is that no student "graduates" from it without having demonstrated attainment of the course objectives in some fashion. Measurement instruments have been developed for this purpose and continue to be improved — program evaluation is continuous, and is built into the course. To counterbalance this strong emphasis on goal attainment and competency, the student is given total freedom in designing a grading contract project for determination of a final grade; these projects represent the individual expectations and interests of the students, above and beyond goal attainment, and encouragement to be "fantastical" in project design is provided.

#### **Phar 5236. Drugs and Society Workshop.**

This course offering enables students who have become involved in community programs during "Drugs and Society" as well as those who desire such involvement, to explore new patterns of involvement and participation in community solutions to drug problems. Weekly forums and seminars supplement this community work, providing a chance for sharing ideas and problems, as well as for didactic presentations on topics ranging from grantsmanship to legislative drafting and lobbying.

For some students, the "Drugs and Society Workshop" provides an opportunity to receive credit for successful completion of approved street agency staff training sessions and for involvement in the day-to-day operations of those agencies; for others, it means helping with the design and implementation of a new parent-child communication program. Still others research such problem-areas as the use of stimulants in the treatment of hyperkinesis, or folk-myths surrounding the use of marijuana. Participation in community projects sponsored by the College of Pharmacy Drug Information — Community Drug Education Program is also available for credit through this course.

**Phar 5970. Directed Studies.**

Directed studies in drug use problems, their prevention and/or treatment.

**Phar 5235. Legislative Drafting. M. Kurzman**

Predominantly for law students and Pharm-D candidates who wish to be involved in the researching and drafting of legislation pertaining to control of dangerous drugs as well as lobbying activity aimed at implementation of the proposed legislation.

**School of Public Health**

The School of Public Health, which has as a part of its assigned mission the instruction in health for the University, has since early 1969 been carrying forth coursework focusing on the problem of alcohol, tobacco and other drug abuse. The School has been meeting these academic responsibilities basically through two areas of instruction — the Chemical Dependency Counseling Program and the Fundamentals of Alcohol and Drug Abuse courses for College of Education students and other University undergraduate students. Faculty also are utilized throughout the University to guest lecture in other departmental courses covering drug abuse.

In addition, the School has offered on a very limited basis each quarter, an interdisciplinary graduate seminar for Public Health and selected graduate students from other academic areas. However, this latter activity, while it is a high priority for the School, has not had financial support that would enable the School to recruit and employ faculty with the necessary competency, ability and time to fully develop the critically needed graduate programs. Funding is again being sought for the 1975-77 biennium through the University's Legislative Special Request for the Drug Information and Education Program.

**PRE-SERVICE AND CONTINUING TEACHER EDUCATION**

The overall objective of these courses is to help students in the teacher education program acquire a broader understanding and perspective of alcohol, tobacco and other drug abuse as a multifaceted, widespread, contemporary public health problem of great magnitude; and to recognize and accept education's role and responsibility for helping to prevent or modify the severity and the course of the problem in individuals and society. In addition, it is the goal of these courses to provide school personnel with the basic knowledge about alcohol and drug abuse required for state teacher certification. All of these undergraduate and graduate course offerings are cooperatively planned and conducted jointly with College of Education and other University faculty.

Focus of these teacher preparation offerings is on the fundamental issues related to the use of all drugs — legal or illegal —

with special emphasis given to abuse and dependency. Alcohol is heavily stressed as the single most abused drug in this society and with the most severe consequences for abusing and dependent individuals as well as for the society. Special attention is given to fostering a more objective attitude toward drug use, abuse and dependency; differentiating between these classes of use; and discouraging making personal or professional judgments as to causes for individual or social drug abuse and dependency. Instead, focus is placed on factual, up-to-date information on pharmacological and legal aspects as well as practical methods of prevention, intervention, counseling, referral, first-aid, and classroom strategies which well-trained teachers can employ. Consultation by School of Public Health faculty is employed to assist College of Education faculty in incorporating public health concepts and drug information into educational methodology courses for pre-service teachers. While content of the courses is designed to satisfy the basic requirements for teacher certification by the State Department of Education, it is structured to enable the non-teacher to acquire knowledge and attitudes beneficial to their own personal and professional fields. Content is offered in courses devoted entirely to alcohol and drugs as well as being included in the basic personal and community health courses offered by the School of Public Health for an undergraduate liberal education. In addition, a special graduate course has been offered for teachers in service and public health school nurses during First Summer Session under both public health and education course numbers. Also, a continuing education course in communication skills and group leadership in drugs is offered for teachers in service through the Department of Evening and Special Classes, Continuing Education and Extension.

**PubH 3004. Basic Concepts in Personal and Community Health.**  
Greene, Schwanke, Rothenberger, others

This course is structured to provide for the basic health education preparation of College of Education and other University students and includes about 20 hours of basic drug education on an elective basis. Students enrolled in the course may elect the drug section or a health section. Education majors needing the drug content for state certification meet both the health and drug requirement through this single registration.

**PubH 3033. Fundamentals of Alcohol and Drug Abuse.** Schwanke, Rothenberger, others

This course is designed to provide the basic health oriented content on drugs for education majors as well as other University students. Content, through Fall Quarter 1974 has been taught jointly with the PubH 3004 Drug Section above. Beginning Winter

1975 it will be taught as a totally separate offering with less emphasis on educational methods and greater emphasis on prevention, casefinding, treatment, and epidemiological and demographic characteristics.

**PubH 3004X or 3033X. Fundamentals of Helping Relationships: Basic Skills.** (Open to students with basic registration in PubH 3004 or 3033) Fischer

This extra credit section is offered to provide students with an introduction into the theory and skills of creating an effective helping relationship. Course includes personal needs of the helper and verbal, non-verbal, and self-involving behavior.

**PubH 3004X or 3033X. Doing Drug Abuse Prevention in Schools.** (Education majors only with basic registration in PubH 3004 or 3033) Norem-Hebeisen, Evans

These sessions will provide a mixture of lectures, demonstrations and experience regarding alternative modalities (classroom process, specific teaching unit content, and interpersonal style) as means to prevent drug abuse.

**PubH 3004X or 3033X. Teaching "Drug Education" to Students.** (With basic registration in PubH 3004 or 3003) Norem-Hebeisen, Evans

These sessions will provide a mixture of lecture and experience in the methodology and course content of drug education for secondary school students. The course will look at alternative approaches to drug education programs and the setting where they will be most useful.

**PubH 5032. (Health 5400). Educational Aspects of Drug Use and Abuse.** Schwanke, Rothenberger, others

This has been a graduate level, Summer only offering designed specifically for teachers in service dealing with curriculum concepts, teaching methods and materials and prevention content aimed at classroom strategies.

**PubH 5034. Topics in Alcohol and Drug Abuse.** Schwanke

A graduate seminar and independent study course offered to provide Public Health students with knowledge and skills in prevention and treatment of chemical dependency.

**PubH 5034. Topics in Alcohol and Drug Abuse.** T. Kurzman

This course is currently being offered to provide credit for people training to be facilitators in the Communication Skills Seminar (described in research section, page 20).

## CHEMICAL DEPENDENCY COUNSELING PROGRAM

The primary objective of the Chemical Dependency Counseling Program is to provide a uniform, high-quality continuing education experience (leading to an undergraduate counseling certificate) for professional and paraprofessional staffs of drug and alcohol agencies and services. This interdisciplinary program has as a secondary objective, the provision of continuing education for other health professionals such as hospital and public health nurses, social workers, psychologists, clergy, physicians, juvenile workers, school counselors, law enforcement personnel and others whose duties include developing helping strategies for the chemically dependent.

The Chemical Dependency Counseling Program is a collaborative training effort involving the School of Public Health, the Department of Evening Classes of the University's Continuing Education and Extension, and academic staff from selected community drug treatment agencies. Funding for the Chemical Dependency Counseling Program is primarily in the form of a training grant awarded to the School of Public Health by the National Institute of Drug Abuse with supplementary funds from Continuing Education and Extension. The program has never received state monies, but will be looking to the Minnesota legislature and/or the State Alcohol and Drug Abuse Authority for future support as federal agencies play less of a direct role in funding drug abuse training activities. Additional funding will also be needed if the program is to realize its potential impact on the training needs for all alcohol and drug abuse workers in Minnesota.

The Program is divided into two phases. First, the classroom phase which is spread over several academic quarters, is used to provide an orderly progression of background material covering the pharmacological, behavioral, psychosocial, and environmental aspects of chemical use, abuse, and dependency. Several of the academic courses supplement didactic material and group experiences related to the development of counseling skills. Instructors are drawn from among specialized University faculty, and also from the highly experienced staffs of the many agencies in and around the Twin Cities.

The second phase is a six month (150 working days) clinical internship, during which time those students electing to complete the requirements for the certificate are assigned to approved community agencies to work in a variety of counseling capacities under skillful supervision wherein interns apply the skills learned in the courses to real situations. This application of the training is extremely crucial as it represents the last evaluation of the intern's ability and suitability for drug counseling prior to awarding the undergraduate certificate which is one of the recognized credentials in Minnesota for lay drug counselors.

The staff is currently involved in an outreach effort in collaboration with the Concentrated Employment Program and the University of Minnesota, Duluth, to provide education and training for alcohol and drug abuse workers in the Northeast section of Minnesota. The model being used is seen as being feasible for providing similar services in other parts of the state. Tentative plans are also being developed in cooperation with the Higher Education Coordinating Commission to offer an education and training program in the Range area of the state.

**PubH 3030. Fundamental Aspects of Alcohol and Drug Abuse.**

Schwanke, Anderson, Kincannon, Heilman, others

This is the first course in a three-course series designed to expose the students to a wide range of topics and issues related to the nature of drug dependency and specific counseling techniques. The intent, at times, is to challenge students' personal views on drug dependency and the drug dependent person and to create an awareness on their part that differing theories do exist on the nature of drug dependency and approaches to rehabilitation and/or recovery.

Emphasis in this first course is on the historical and cultural perspectives of the drug abuse problem and the principles of pharmacology as applied specifically to the various classifications of mood altering chemicals.

**PubH 3031. The Disease Process and Social Implications of Drug Abuse.** Kincannon, Heilman, Anderson, Kurzman, Schoener, others

This is the second course in the series of three core courses offered by the Chemical Dependency Counseling Program. In this course the student begins to examine several models of dependency in an attempt to examine the reasons why some individuals become dependent on drugs. We will also begin to take a critical look at the various treatment modalities and some general issues related to treatment of drug dependency. In addition, this course deals with some of the legal and social problems related to drug dependency.

**PubH 3032. Counseling the Alcoholic and Other Drug Dependent Persons.** Anderson, Swift, Fletcher, others

This course is devoted to exploring such topics as what is a chemical dependency counselor, what are some specific counseling techniques that apply to working with the chemically dependent, what are some of the basic principles of group counseling, and how do we include the family in our efforts to assist the dependent person.

It appears that different orientations to counseling are more effective with certain subpopulations and even with individuals within that subpopulation. For this reason, we try to expose the students to a variety of counseling theories and allow them the opportunity to pick and choose the various concepts that enable them to work effectively with dependent persons.

**PubH 3035. Internship in Alcohol and Drug Abuse.** Meads, others  
The 150-day (1200 hour) internship has been divided into three "tracks," each of the three covering one facet of drug treatment and rehabilitation. The community track encompasses out-patient programs, referral agencies, community mental health programs, industrial counseling, etc. The inpatient track deals with the one-to-one counseling, intake procedures, and post-treatment planning. Finally, the residential after-care track covers the so-called halfway, quarterway and three-quarter way houses. The internship has been designed to expose the intern to each of these three areas, though the length of time in each will vary according to the student's needs and desires.

**PubH 3036. Basic Helping Skills.** Armstrong, Meads, Fischer  
The course provides the background and skills in the use of dyadic relationship for promoting personal growth and development in clients. The course material covers one's needs to be a helper, effective nonverbal communication, effective verbal responses, self involving behavior, understanding others' communication, and establishing effective helping relationships. The course incorporates small groups, role playing and practicing both effective and ineffective methods in addition to traditional teaching methods.

**PubH 5036. Group Counseling Techniques.** Pletcher, others  
This course is designed to use personal experience in the process of enhancing skills and understandings in group process. Laboratory participants explore the impact of personal behavioral style on group process. Techniques of facilitating group interaction, both in group therapy and in staff meetings are considered. Participants learn through a progression of realistic simulation and problem-solving exercises, self-assessment techniques and lecture presentations. Emphasis is upon the skills involved in setting a positive group climate, the analysis of transactive forces, and goals in drug dependency group treatment.

**PubH 3034. Chemical Dependency: A Family Illness.** D. Wegscheider, S. Wegscheider

This course provides background and skills for the use of helping professionals. The goal is to enable students to grow into being effective helpers by growing in their own wholeness. The course



material covers family systems, congruent and incongruent means of coping with stress, responsibility, and making choices, alcoholism as the disease of the whole person, alcoholism as the disease of the whole family, new systems needing new nurturing, and the therapist's need for nurturing. The course incorporates group experiences, feedback exercises, as well as traditional teaching methods.

### **School of Business**

**IR 8000. Industrial Control Systems for Chemically Dependent Employees.** (Available to representatives of management, labor and graduate students in industrial relations) Wrich

This course is designed to provide information and data on the impact of chemically dependent employees and other troubled employees and to develop skills necessary to design, implement and maintain systems to control human and productivity loss.

### **College of Education**

**PsyF 5178. Psychology of Drug Abuse.** Wong

Psychological and sociological problems of drug abuse with special reference to schools, teachers, and students. Television program titles include: Drugs and the Schools, Drug Use and Abuse Patterns, Personal Values and Drug Use, Psychological Causes of Drug Use and Abuse, Drug Education — Alternatives, Sociological Causes of Drug Use, Drug Education — Attitudes, Laws, Detection and Crisis Intervention, Street and Referral Agencies, Chemical Dependency, Rehabilitation.

### **Law School**

**Law 5864. Seminar: Drug Crimes.** Park

The first three sessions are devoted to discussions of social policy issues and the effects of drugs. The next six sessions deal with litigation issues in drug cases: entrapment, search and seizure, buyer's agent defense, nature of "possession", drug induced intoxication as a defense, constitutionality of drug statutes.

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# Research Activities

## Twin Cities Campus

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### **Alcohol Education — An Alcohol Use Intervention Project** Jim Anthony, Principal Investigator

This project has as its objectives:

1. To develop an alcohol use intervention project for underage drinkers referred to the juvenile corrections system which will produce significant cognitive and affective gains associated with responsible alcohol use and positive alternatives to alcohol use and which will produce a demonstrably positive effect on alcohol use behavior.
2. To evaluate the project in terms of its effect on postintervention alcohol use patterns within established limits regarding confidentiality of data, and in terms of its effect on cognitive and affective dimensions associated with the responsible use of alcohol and positive alternatives to alcohol use.
3. To communicate the results of this project so that they can be utilized by other programs.
4. Should positive evaluation results be obtained, to continue to implement the project in institutional and community corrections settings and in pre-trial diversion programs for juveniles now labelled as "delinquents" because of underage drinking.

Funding: LEAA, \$8,000; DIEP, \$2,000.

### **Overdose Aid — A Drug Use Intervention Project** Jim Anthony, Project Coordinator

This project has as its objectives:

1. To identify, through the juvenile court system, a population of youths with a high probability of past or current drug use experience (self-reported).
2. To expose a randomly-assigned half of the identified youths to a control comparison program involving implementation of a commonly used drug information textbook and activity regimen, and to expose the other half to an experimental overdose aid-oriented drug education program.

3. To measure and to compare, by means of pre-tests and post-tests, the immediate effects of the intervention program and the control program on cognitive and affective dimensions which research has shown to be associated with responsible use of alcohol and other drugs and an acceptance of positive alternatives to drug use.
4. To establish an evaluation design which permits implementation of the intervention program at least two times during the funded year and which will yield formative evaluation results and guidelines for revision of the program after the first program is completed.
5. To measure and to compare, by means of follow-up data collection within limits established by confidentiality and the protection of constitutional rights, the long term effects of the intervention program on alcohol and drug use patterns, as well as patterns of use of positive alternatives to drug use.
6. To continue to implement the intervention program through the Drug Information and Education Program in institutional and community corrections settings, as well as pre-trial diversion programs and other relevant programs, should positive evaluation results be obtained.
7. To facilitate implementation of the program by other groups, and to expand the knowledge base in this problem area by publishing a project report and guidelines for implementation and making them available for appropriate distribution.

Funding: DIEP, \$4,200.

#### **Development of a Drug Control Evaluation System**

Albert Wertheimer, Jim Anthony

The purpose of this study is to test the hypothesis that when a drug is brought under control there will result a reduction in availability of the substance for illicit purposes, and that this reduced availability will in turn result in a change in the pattern, scope and significance of the abuse of that drug. In more detail, the study consists of:

1. Identifying the information requirements for evaluating the effectiveness of the drug scheduling;
2. Assembling, integrating and evaluating appropriate available information, and implementing an evaluation of drug controls upon 12 specified drugs;
3. Identifying data gaps in the evaluation;
4. Recommending an improved system and developing new data collection plans in performing a cost and feasibility analysis of the proposed system.

Funding: An inter-agency committee composed of representatives of DEA, NIDA and the FDA, \$93,000.

**Drug Monitoring and Education for the Elderly**  
Maxine Hammel

This proposed project deals with the establishment of a system of drug use control and drug education for the elderly. To meet the problems associated with living alone and the elderly's health care as they relate to drugs, the project will have components which are both service oriented and education oriented. The high incidence of chronic disease in the elderly coupled with a myriad of treatment combinations (including self-medication with over-the-counter drugs), failing memory, poor eyesight, varying pharmacological responses to drugs associated with the aging process, numerous fallacies concerning drugs and health in general, and a lack of guidance and care for many of the non-institutionalized elderly, outline some of the many factors contributing to the problem. The alternative to home care for the elderly, institutionalization, is both socially and economically desirable to postpone until all other alternatives have been pushed to their maximum effectiveness. The initial program participants will be health science students and faculty at the University of Minnesota. The initial target population will be elderly individuals who have demonstrated need for drug monitoring and/or education as determined by their social worker (through Jewish Family Service or Catholic Charities Program for Aging). The funded project will also attempt to provide a model for drug use control and education which can be used for other populations on an ongoing basis.

This project has as its objectives:

1. To educate health sciences (and practicing professionals) on the psychological and sociological aspects of aging and the resulting effect on drug use by the elderly population.
2. To monitor and provide drug use control on a one-to-one basis for those individuals who demonstrate a need for this type of monitoring and who are not institutionalized.
3. To educate the elderly on the proper use of prescription and over-the-counter medications through group presentations.
4. To provide and evaluate a working model which can be used on an expanded, ongoing basis in other communities for both elderly populations and other groups in need of this type of educational service.
5. To provide a base at the University of Minnesota for continuing organization and participation in the program on an ongoing basis.
6. To be a friend.

Funding: Higher Education Coordinating Commission, \$12,000.

**Socio-Metric Profile of Alcoholism: A Pilot Study**  
Joseph Westermeyer

The proposed research has as its goal the development of a socio-metric profile for alcoholism. This program would be based on statistics routinely collected by a variety of social agencies which have some demonstrative relationship to alcoholism. Later, events with a possible — but as yet unknown — statistical relationship to alcoholism could be investigated. In this way, the effects of alcoholism on child raising, the family, and society might be assessed both qualitatively and quantitatively.

The project will first examine over a two-year period whether a valid socio-metric profile for alcoholism can be developed for Minnesota as a whole, and for geo-political units within the state. If shown to be feasible in the first two years of work, we would then seek further funding for another two years in order to establish an ongoing registry. The registry would be employed for evaluation and cost effectiveness of alcoholism programs now beginning around the state of Minnesota and for epidemiological research on alcoholism.

**Funding: Public Health Service, \$75,526.**

**Delphic Probe**  
Keith Johnson

In an attempt to provide guidelines as to the future policies of the University of Minnesota in relation to the dual questions of drug abuse and drug abuse education, the Drug Information and Education Program has commissioned a Delphic survey to delineate and assess policy alternatives. The Delphi methodology is a technique which allows for the systematic collection of informed judgments on a particular topic. An essential feature of this technique is that the participants on the panel (anonymous with interaction only via the mails) consist of acknowledged "experts" in the given field.

**Funding: DIEP, \$3,000.**

**Communication Skills Seminar**  
Terri Kurzman

Jointly sponsored by: Drug Information and Education Program, Metro Drug Awareness (Minneapolis Health Department), Center for Educational Development (University of Minnesota), and Minnesota State Alcohol and Drug Abuse Authority.

This program is designed to reduce and/or prevent antisocial behavior, including drug-abusing behavior, among high-risk high school students. The plan for the ten weeks of the program calls for parents *not* from the same family to meet together in small groups for the first five sessions. The subsequent five sessions

will bring the adolescent and his own parent together in interaction for increasingly greater portions of the training session, so that in the last sessions the adolescent will meet predominantly in small groups with his own parent. In the program sessions, initial stimulus materials such as short movies, value-clarification games, and role-playing techniques will be followed by discussion among adolescents and parents about drug use and abuse, self-concept, adult and peer pressures, and communication techniques. The specific objectives are to:

1. Aid schools in identifying a population of high-risk students;
2. Train the identified students and their parents in parent-student treatment-oriented discussion groups;
3. Effect immediately through the training program:
  - a. increased trust in the relationship;
  - b. increased mutual understanding of each other as separate, unique individuals;
  - c. increased sharing of information;
  - d. effective usage of "active listening" techniques;
  - e. increased self-esteem and lowered anxiety.
4. Effect immediately through the training program clarifications and changes of attitudes toward drug use and abuse.
5. Effect eventually through the training program reductions in:
  - a. truancy and attendance problems;
  - b. acting-out behavior as reflected in referrals to school and law enforcement personnel responsible for disciplinary problems;
  - c. drug use and abuse.

The program model will be a revised version of one assembled and tested successfully in three school districts through state funds from January to May, 1973. A concomitant research project is designed to demonstrate the success in each of the objectives listed above and, incidentally, to obtain more feedback for further revision.

#### **Experimental Drug Education Curriculum for Elementary Schools Alan Briskin**

Jointly sponsored by: Drug Information and Education Program, Center for Educational Development (University of Minnesota), Family Social Science (University of Minnesota), Independent School District #196, Rosemount, Minnesota, and Minnesota State Alcohol and Drug Abuse Authority.

A pilot research project was run in 1972-74 in Rosemount School District to determine the impact of experimental procedures on the moral development, communication skills development and drug content mastery of sixth grade students. The pilot years were divided into three phases: teacher training, curriculum development

and implementation. Teacher training included introduction to drug information, group facilitation and research skills. The experimental curriculum was developed by the teacher group in cooperation with the University research team during an intensive summer workshop. The implementation phases included 1) pretesting for content knowledge, stage of moral development and communication skills; 2) curriculum implementation with sixth grade students; and 3) post-testing for content knowledge, stage of moral development and communication skills.

The experimental drug education program will continue through 1976, thus extending experimental or control procedures to all 1) to cover expenses of implementing experimental and published curricula; 2) to support data collection including drug information scores, ratings of stages of moral development and ratings of communication skills; 3) to support analysis of the data; and 4) to support the development of specific procedures for a follow-up study of experimental and control subjects' drug related behavior after three years when they are in the ninth grade. During this next year, the experimental treatment will involve the following components:

1. Training teachers in elements of pharmacology and teaching drug education.
2. Training teachers in developmental psychology and facilitation of moral dilemma group discussions.
3. Providing for a three-year follow-up of experimental and control subjects to determine drug-related behaviors.

The principal research question is to determine whether a broad-gauge intervention program can effect any change at all in students' behavior vis-a-vis drugs, beyond the most common alternative used in public schools. If the total intervention effort does turn out to have demonstrable advantages, an extended research effort can be considered in which the contributions of the various components are examined separately.

Since the criterion for success of the program is drug-related behavior of students, the study must necessarily be longitudinal. Our intent is to follow students over at least three years, by which time they will have completed the ninth grade, roughly ages 14-16. Some research has shown that the majority of major drug problems will have surfaced by that age. It is possible to make estimates of effectiveness before the follow-up is complete by assessing students' attitudes and decision-making skills. The relationship of such interim measures to the ultimate behavioral criterion will initially be hypothetical, but by the end of the study, there will be evidence on their predictive validity.

The outcome of the study will thus be twofold: 1) the efficacy of an intervention program will be assessed, leading either to adoption or adaption by other school districts, or to investigation along other directions, and 2) the reliability and predictive validity of short-term

measures will be assessed, leading either to adoption or adaption by other researchers, or to proper skepticism of research results based on such measures.

The research will attempt to answer these specific questions:

1. In a replication of the pilot year design, can the moral development level of sixth grade students be raised?
2. Is the experimental curriculum consisting of creative drug education content, student research projects and teacher facilitated moral dilemma discussion groups a more powerful stimulus for content mastery and stage growth than a standard publisher curriculum?
3. How is stage of moral development related to student's subsequent drug-related behavior?

This research may be of value in at least three different ways:

- 1) We hope to demonstrate a correlation between moral stage of development and extent of drug use. This relationship may shed light on a number of other variables.
- 2) In addition, this research project may actually lead to a decrease in drug abuse among members of the treatment group. If this is found,
- 3) the curriculum itself and the training procedures concomitant with it can easily be replicated on a wide scale.

#### **Drug Abuse Research and Evaluation Consortium**

Jointly sponsored by: Drug Information and Education Program, School of Public Health, College of Education, College of Pharmacy, Health Professionals Drug Abuse Education Project, Department of Social, Psychological and Philosophical Foundations of Education (University of Minnesota), Center for Education Research (University of Minnesota), Metro Drug Awareness (Minneapolis Health Department), Drug Information Center (University of Minnesota, Morris), and Drug Education Program (University of Minnesota, Duluth).

During the past two years, faculty at the Duluth, Morris, St. Paul and Minneapolis campuses have, alone and in combination, provided research and evaluation expertise to the University and the state citizenry in the area of drug misuse. A proposal is presently before the Minnesota State Alcohol and Drug Abuse Authority to provide an intercampus repository of evaluation expertise and to develop formative evaluation instruments in response to manifestation of need from the Drug Authority. An example of one way in which this consortium may function is set forth below.

At the present time, a number of drug education programs in the Minneapolis area share similar objectives. Some of these shared objectives are:

1. To increase learner knowledge of drug use and drug use problems.



2. To promote the development of "nonjudgmental stances" toward individuals with drug problems, permitting such individuals greater access to treatment and other health care.
3. To increase participation in community-based projects directed toward the elimination of drug use problems.
4. To provide experiences through which the learner can gain new skills which will facilitate participation in the above.

Accordingly, a cooperative plan was developed whereby each of the University-based drug education programs contributed money, skills and/or person-power to a common Evaluation Consortium (hereafter, EC). Specifically, the Health Professionals Drug Abuse Education Project (hereafter, HPDAEP) [funded by NIMH] contributes evaluation instruments, "time" which has been purchased through HPDAEP funding, and a small test population of practicing health and helping professionals. In return, the HPDAEP group is able to test the validity and reliability of their instruments and the validity of their educational strategies with larger populations through the EC (e.g., see description of "HPDAEP for Students Program", page 29). Additional person-hours purchased or supplied by the EC can be given to HPDAEP to compensate for hours spent by their evaluator working with the EC.

The Public Health Drug Counselling Program (PHDCP) [funded by NIMH] contributes man-hours and expertise to the EC through time purchased from James Boen, Associate Professor of Biometry at the University, in addition to some limited consultation monies. The PHDCP also contributes test populations of health and helping professionals already working in the field of chemical dependency. In return, the PHDCP receives evaluation instruments and expertise in educational planning from the EC.

The Public Health Education course offered by the School of Public Health also provides a test population of education students. In return, they receive evaluative instruments and educational planning from the EC.

The Drug Information and Education Program at the University contributes monies to be used to purchase evaluative expertise from the Department of Social, Psychological and Philosophical Foundations of Education, and from the Center for Educational Development at the University of Minnesota. Monies are also contributed toward the purchase of processing personnel and costs.

In addition to the above mentioned University programs, the Minneapolis Health Department, Drug Awareness Unit contributes test populations of parents, clergy, teachers and others, as well as monies for use by the EC. In return, they receive evaluative instruments and program planning expertise.

### **Establishment and Elimination of Oral Drug Dependence**

Travis I. Thompson

The purpose of the proposed research is to investigate several key factors thought to be involved in the acquisition of drugs as oral reinforcers and the weakening of oral drug reinforcers in rats.

Funding: NIMH, \$310,511.

### **Ethanol Self-Administration by Animals**

Travis I. Thompson

The overall objective of the research is the investigation of variables that influence the development, maintenance and elimination of ethanol as a reinforcer for rhesus monkeys. Ethanol serves as a reinforcer when it is consumed at levels that exceed intake of its vehicle liquid, which is usually water. The variables affecting ethanol intake may be divided into three classes: 1) Past history (e.g., prior experience self-administering other drugs), 2) Current circumstances (e.g., presence of the odor of ethanol), and 3) Reponse consequences (e.g., volume per reinforcement).

Funding: NIMH, \$227,550.

### **Pending Research Proposals**

Family Treatment of Alcoholism

Amount Requested: \$198,000 — Agency: NIAAA

Drug Use Patterns and Social Competencies

Amount Requested: \$982,000 — Agency: NIDA

Chemical Dependency Coordinator — Health Service/Student Counseling

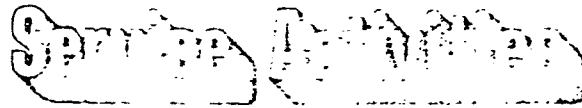
Amount Requested: \$20,479 — Agency: MN Alcohol and Drug Abuse Authority

Evaluation Consortium

Amount Requested: \$750,000-1,000,000 — Agency: MN Alcohol and Drug Abuse Authority

### **Research Award Turned Back**

In June, 1974, the National Institute of Drug Abuse awarded a grant entitled "Cognitive Dissonance Effects on Drug Attitudes" to the College of Education, Twin Cities Campus. After notification of the award, the Drug Information and Education Program conducted a University and community review of the impact of the intended research and a determination was made that the objectives of the proposal were not relevant to current needs. Accordingly, the award was declined by the University.



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Twin Cities Campus

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**Community-University Coordinator**  
Jimmy H. Evans

A new faculty member, appointed to the faculty in the School of Public Health and officing with the Drug Information and Education staff, has primary responsibility of maintaining and developing community input of needs to the University so that appropriate inter-departmental responses can be developed.

**Drug Information Service Center (DISC)**

As a specialized drug abuse resource library, DISC has compiled over 500 books and 2000 articles and maintains subscriptions to relevant newsletters and journals. New literature is constantly being evaluated and research is ongoing to insure that up-to-date and relevant information is available.

The catalog of DISC was computerized and an updated catalog has been distributed to each of the state college and University campuses as well as numerous Area Mental Health and state agencies involved in combating drug misuse.

Additionally, two newsletters, one directed toward "Treatment" and one toward "Education" are distributed monthly to each Area Mental Health Board, each public school and persons involved in treatment and education who have been identified by DISC and/or other state agencies.

DISC has recently moved from N620 Elliott Hall to 48 Appleby Hall (the Pharmacy building) and is beginning to integrate its services with those of the Drug Information-Community Drug Education Program. DISC is open to University students and to the community during regular working hours and by appointment.

**The Drug Information-Community Drug Education Program (DI-CDEP)**

The College of Pharmacy Drug Information-Community Drug Education Program provides services in these primary categories:

1. Drug Information: Printed materials, visuals, and other resources

materials, as well as over-the-phone or through-the-mails question answering, are available.

2. **Community Drug Education:** Pharmacy students, as well as other health sciences, law and social sciences students, educated through the Drugs and Society course (see page 8) to communicate with elementary and secondary students and adult groups about drugs and related issues (the law, overdose aid, etc.). Teams of these students, or individual students are dispatched to give presentations about drugs and to lead discussions when requested. The usual format is a short presentation followed by values clarification exercises, group discussions, and the answering of questions. Approximately three presentations about drug problems are given by students to local elementary, junior and senior high school students, as well as other community groups, each week.

Throughout the school year the College of Pharmacy, through its DI-CDEP staff, sponsors short educational programs relating to drug use and drug problems for health science students and existing professionals. There are, on an average, one of these per University quarter. The most recent have included Overdose Aid Seminars, implemented with the help of staff members from the Health Professionals Drug Abuse Education Project.

A variety of patterns of community involvement are available through the DI-CDEP. These include the following:

1. Alcohol Education Project (p. 17)
2. Overdose Aid Education Project (p. 17)
3. Communications Skills Seminar (p. 20)

College of Pharmacy faculty and students currently serve as a back-up resource for Metro Drug Awareness Street Drug Analysis Program, analyzing ethical products which have come from Mexico, and unknown organic substances. The College has now obtained a permit for Schedule I substances, and the students and staff hope to expand their ability to serve as a resource for Metro Drug Awareness.

Following successful completion of the Drugs and Society course (see p. 8) a number of students have become involved in street agencies, hot-lines, and free clinics on a continuing basis. These students participate on crisis intervention teams at drop-in centers, rock concerts, and in emergency rooms; others practice their disciplinary skills, promoting community health in free clinics and V.D.-family planning clinics.

Over the past three years, the DI-CDEP services have evolved from a primary focus on one-shot drug education presentations, through a period of experimentation and development of innovative on-going programs, into the current emphasis upon implementation and evaluation of these innovative programs. The DI-CDEP continues to provide single presentations when requested, but increasingly these are provided within the context of an ongoing drug

education program developed by individuals in the community or in schools.

#### **Community-University Projects**

**Hazelden Research Consultants**  
Kaye Wildasin, Virginia Newcome

This project offers research project assistance and consultations and is available to community people and students. Specialization is on information regarding alcohol and related problems and includes the following:

1. Research library file I, "The Chemically Dependent Woman," contains over 300 published articles that are available for reference.
2. Research library file II, "An Historical and Contemporary Accumulation of Follow Up Evaluative Studies of Alcoholism Treatment Programs," contains over 400 articles and research papers available for reference.
3. Access to CAAAL, the Classified Abstract Archives on Alcohol Literature, consisting of over 15,000 abstracts of studies on alcohol.

Extensive computer assisted bibliographic information is available for the two files.

**Teen Age Health Consultants**  
Kay Gudmestad, Coordinator

The Teen Age Health Consultants (TAHC) program is designed to provide 12 to 20 year olds with accurate and nonjudgmental health information. This goal is accomplished by training teenagers to function in their communities as peer resource persons.

Recruitment of program participants occurs primarily within the school system. Generalized health information and specific action-oriented seminars are conducted by appropriate community resources. Once the training is complete, the TAHC participants are encouraged to design and implement projects which will provide education, referral and advocacy services to other young people.

Funding: DIEP, \$4200.

#### **Health Professionals Drug Abuse Education Project (HPDAEP)**

The Project is funded by the National Institute on Drug Abuse and sponsored by Health Sciences Continuing Education at the University of Minnesota. The Project offers various training and educational programs in the area of chemical dependency. The target audience is practicing health professionals from Minnesota, Iowa, North and South Dakota and western Wisconsin. The major project goals are:

1. Encouraging a more responsive attitude toward drug users and abusers.

2. Teaching basic skills for the diagnosis and referral of chemical dependency problems.
3. Promoting change in the health professional's family, practice setting and respective communities.
4. Promoting interdisciplinary involvement and cooperation.

A general seminar has been developed to try to accomplish the project goals. The seminar objectives are to assist the participants in:

1. Becoming aware of how their attitudes toward drug users and drug abusers affect the health care they provide to clients with drug-related problems.
2. Developing an understanding of the chemically dependent person.
3. Becoming aware of how they as health professionals can better provide care for clients with drug-related problems.
4. Discovering methods of obtaining information concerning their client's drug taking behavior that will have a direct effect on treatment-referral options.
5. Understanding some of the information and training resources that are available to them beyond the general seminar.

Speciality seminars can be requested in order to present a comprehensive approach to specific problem areas. Additionally, traineeships are available in order to provide clinical experiences to those who attend a general seminar.

HPDAEP, in cooperation with the Drug Information and Education Program, presented, on a pilot basis, the program which was developed for practicing health professionals to students and faculty in the Health Sciences at the University of Minnesota, Twin Cities campus. This program, held in December, 1974, was in all probability the first interdisciplinary drug abuse program for students and faculty offered anywhere in the country.

In March of 1975 the workshop will be offered at the request of an entire community, Crow Wing county, in northern Minnesota. Civic leaders, law officers, parents, health professionals, educators, etc., will be in attendance.

The Project is currently cooperating with the development of a model training workshop for the school system in the State of Minnesota. HPDAEP, in cooperation with Drug Education for Youth and Metro Drug Awareness, will be implementing the pilot workshop in Spring of 1975.

**Minnesota Medical Information Service**  
Roger Schroeder, Director

There are four components to this statewide service, all of which are located in the Pharmacy Department at the University Hospital.

Over 2,000 informational requests are handled each month by this source. 5% of which come from lay persons. The components services are:

1. Dial Access — A telephone tape service which serves primarily as a continuing education service for health professionals.
2. Medical-Dental Service — Outstate health professionals have access to University Consultant expertise via telephone conferences.
3. Drug Information Center — Most lay requests for information come through this center which serves primarily as a backup resource for numerous street agencies and health professionals giving specific help in identification of drugs and their effects.
4. Bio-Med Library — Requests for specific references, journals, etc. are processed through this component which has computer access to the Bio-Medical Library at the University.

#### **Office for Student Affairs**

University Health Service and Student Counseling Bureau have a combined staff of more than 50 physicians, psychologists, psychiatrists, and social workers delivering direct services to students. A Health Service psychiatrist, Janet Hoveland, and a Counseling Bureau psychologist, Rodney Loper, are working together to structure and implement a specific service program for chemically dependent students. Current program consists of evaluation and referral to community agencies.

Programmatic decisions on the use of drug abuse funds on these campuses are made by the administration and faculty on these campuses in close cooperation with the Drug Information and Education Program.

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# Coordinate Campus Activities

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## Duluth

Frank Guldbrandsen, Assistant Professor, Secondary Education  
Charles L. Frederick, Assistant Professor, Secondary Education,  
Coordinator, Drug Education-Information Program

1. Educational and Informational. Training programs in Drug Abuse Education for:
  - a. pre-service (teachers in training)
  - b. in-service (teachers in schools)
  - c. medical students
  - d. social work students
  - e. counselor students
  - f. community professionals and paraprofessionals
2. Cooperative drug abuse prevention information and education programs within the University components of: Student Personnel Service, Medical School, Social Work School, and Department of Education and Psychology.
3. Maintenance of DIRRS Centers (Drug Information Resources and Referral System).
4. The training and supervision of campus ombudsmen or student advocates to provide for anti-abuse programs and drug first aid and crisis intervention counseling.
5. The development of an analysis anonymous program to analyze street drugs. This was done in cooperation between the UMD Drug Center and the St. Louis County Health Department.
6. The maintenance and expansion of research into the patterns of use and abuse of chemicals in the schools.
7. The development of evaluation techniques for drug abuse education programs.
8. The development of a comprehensive University-public school-community drug abuse education vehicle.

The UMD Drug Education-Information Program is in the early stages of needs assessment and program development. By the end of the 1974-75 academic year, a comprehensive plan will exist.



## **Morris**

Gordon Bopp, Academic Dean

Gary Buer, Instructor

Kevin Flicker, Coordinator, Morris Drug Information Center

### **Morris Drug Information Center (MDIC)**

The Morris Drug Information Center, a part of the University of Minnesota's Drug Information and Education Program, serves as a resource center for a number of drug-related services. While MDIC serves primarily the student population at the University of Minnesota, Morris, requests for services from all areas of the state are considered, and have to date encompassed a wide geographical area. Specifically, MDIC provides the following services:

1. A drop-in drug resource library filled with approximately 200 volumes which may be borrowed. Relevant articles, handouts, and pamphlets are available. MDIC also maintains subscriptions to various drug-related newsletters and journals. Literature is constantly updated and evaluated for accuracy and objectivity. A supply of audiovisual materials concerning drug use and abuse is also available.
2. Short term counseling and possible referral service for people having chemical dependency problems. Attempts are made by MDIC staff to personally visit and consequently establish communication with local chemical dependency treatment centers, detoxification centers, mental health centers, and sobriety groups, in order to give knowledgeable and appropriate referral recommendations to those in need. In addition, MDIC staff are trained in drug first aid techniques in the event of a chemically induced emergency.
3. Assistance with concerned drug education programs and workshops at all educational levels: adult, college, secondary, and elementary. Assistance may include consultation and advice in designing and implementing a drug education program, speaking engagements by MDIC staff, or the loan of informational materials (books, handouts, audiovisual materials).

### **COURSE ACTIVITY**

#### **PE 1710. Drug Use and Abuse. Buer**

Large group lecture and small group discussions are used to help the student better understand drug use and abuse and his relationship — as an individual and as one working with young people — to the drug scene. Successful completion of this course will result in an individual who has knowledge of drug use and abuse, who is aware of the risks involved with drug usage and who has developed a fundamental valuing process to assist him in making responsible decisions regarding the usage of all drugs.

## **Rochester Center**

**DEWS — Dependency Early Warning System**

**Mary Adams Martin, Director**

**Jerry Herber, Coordinator of Student Planning**

A program aimed at education to and identification of chemical problems. The program's objective is to respond at an early stage to the needs of chemically involved persons and to do so without disruption of employment.

The goal of DEWS is to help chemically involved persons and their families develop a meaningful and productive way of living in a drug-oriented society by:

1. examining their current attitude toward the use of chemicals;
2. helping them assess realistically the gravity of the present chemical problem in which they are involved;
3. alerting them to the predictability of the progress of the disease of chemical dependency;
4. working with them in the development of an ongoing program of self-assessment;
5. referring them — when indicated — to appropriate community resources for followup help.

Co-Sponsored by Zumbro Valley Mental Health Center, Rochester State Hospital.

Funded by the Minnesota State Alcohol and Drug Authority.

### **COURSE ACTIVITIES**

The credit courses are:

**Human Services Generalist/Chemical Dependency I-II (GC-3071-2)**  
16 credit course from General College, University of Minnesota for persons working in direct client care or aspiring to do so.

**Addict: (Alcohol and Drug Dependency In-Service Career Training) (GC-3075)** — Training for Detoxification Center Personnel: Six-day intensive course to train persons employed in Detoxification Centers. 3 credits from General College, University of Minnesota.

Funded by Minnesota Authority on Alcohol and Drug Abuse.

The non-credit courses are:

**CECCA (Community Education: Concepts of Chemical Abuse)** — Designed primarily as part of a diversion program from Olmsted County Court in which persons charged with alcohol related offenses are sent to treatment or educational programs. Funded by Rochester Foundation.

DEWS (Dependency Early Warning System) — Night nonresidential educational experience designed for early intervention in Chemical Dependency of the employed person and his spouse.

**In-Service Personnel Training Seminar** — Twelve day training sessions for the Department of Public Welfare for providing experimental based instruction for persons working in Alcohol units and Drug units at State Hospitals.

Appendix D

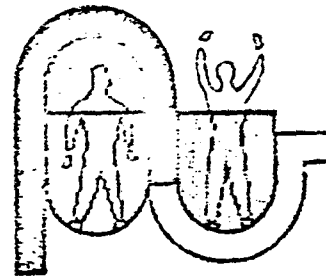
— AN INTRODUCTION TO  
PHARMASYST

College of Pharmacy

An Introduction to

**PharmaSYST**

Center for the Study of  
Pharmaceutical SYSTems



PharmaSYST  
318 Harvard Street South East  
Minneapolis, Minnesota 55455

Phone: (612) 376-3192

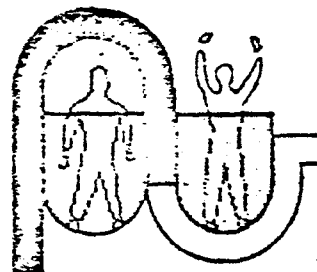
## BACKGROUND

The importance of the era of individual research is waning. In its place have grown groups of talented researchers to reflect the multi and interdisciplinary nature of the world about us. Such organizations permit the creation of a critical mass of people resources and ideas that in time generate advancements in a field or discipline. With proper organization and direction these organizations may become very successful in securing grants and other support and, in time, due to their ability and high quality work are sought out by others who desire their various services.

There are numerous beneficial spinoffs for the associated institutions including an increase in academic mass, greater resources than those available through legislative support, graduate student support and a steady flow of outside thought.

## PURPOSE

The Center for the Study of Pharmaceutical Systems, PharmaSYST, is devoted to the study of the provision, utilization, delivery and outcome of pharmaceutical and all other health care services. An interdisciplinary group of people having special experience in basic qualitative research skills has been assembled to study the planning, management and evaluation of health care services. The mission of the Center will be to strive toward the development, testing and dissemination of information relating to the provision of the highest quality optimally accessible and least cost health care services with particular attention paid to pharmaceutical services. The objects of study are seen as pharmacy and its associated disciplines, interests and related functions and equally, drugs, in the many perspectives in which they are prescribed, used, and transferred, as well as the provision, need, assess-



ment and analysis of all health care services. Such interest includes attitudinal matters from the point of focus of the prescriber, organizer, government payer and the manufacturer, seller, and patient, including also economic and other social science perspectives. The Center will seek its own support, contract to produce instructional resources and act as a broker to package appropriate mixes of administrative, economic, educational, behavioral, biological and physical scientists to undertake the conduct of its endeavors.

### ORGANIZATIONAL RELATIONSHIPS

The Center is associated with the College of Pharmacy, University of Minnesota. It will be independent of any departmental structure and be responsible to the Dean of the College of Pharmacy and accountable to its policy making body, the Principals.

### INTERNAL ORGANIZATION

The Center (PharmaSYST) in full bloom will utilize three types of personnel.

These are:

1. Full time and part-time employed staff
2. Principals
3. Associates

1. *Staff* — it is necessary to maintain a minimal core of personnel who will be primarily responsible to PharmaSYST and whose duty it will be to perform the day-to-day operations of the Center, to provide continuity and liaison between and among principals, associates and work groups and clients, etc., project development, marketing, secretarial, clerical, financial management, bookkeeping and technical support functions.

**PharmaSYST**

a. *Manager* — The office manager handles routine mechanical matters, program planning, graphics, bookkeeping and clerical type functions. This person would perform administrative duties and supervise other staff.

b. *Secretary/Receptionist* — would cover the telephones, greet guests, clients, visitors, arrange programs, travel, handle routine correspondence, publication requests, inquiries, handle duplicating, typing, filing and other office tasks.

c. *Executive Director* — is a known researcher and person capable of serving the public relations need of PharmaSYST. The Executive Director would be expected to be visible, travel and command the respect of researchers, educators, colleagues and potential clients. He must be able to raise money, sell and have organizational skills.

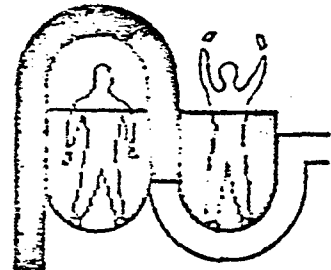
d. *Research Project Development Assistant* — takes concepts and carries them into completed contract and grant proposals with the aid of other staff.

e. *Statistician* — development of study design, analysis of data and evaluation work for proposals and ongoing studies.

f. *Programmer, EDP Coordinator*

g. *Psychologist or Sociologist*

2. *Principals* — The Principals will comprise the policy authority for PharmaSYST. They will consist of 11-13 people appointed for three year terms from the College of Pharmacy, University of Minnesota, the Pharmacy world and related areas such as Health Planning, Public Health, and the public. Initially the Dean of the College of Pharmacy will invite participation. Following the initial cycle the Principals will nominate and invite replacement.



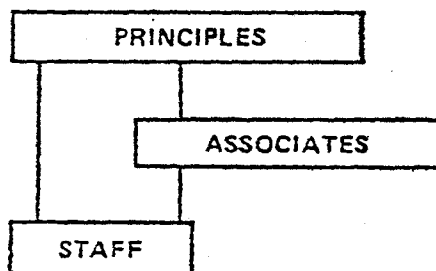


to fill the Principal vacancies. Suggestions will be sought from staff and associates. The staff will be responsible through the Manager to the Principals. The Dean of the College of Pharmacy will chair the Principals.

3. *Associates* – Members of the University of Minnesota, Macalester, Hamline, Augsburg and other College and University faculties, employees of health planning, service and regulatory enforcement organizations would be invited to join the Center as associates. These scholars would lend their names and support to the Center and engage in work on interdisciplinary teams (for payment) when projects require their particular skill and experience. It is anticipated that unique study teams would be created and tailor-made for each project. Disciplines to be represented include:

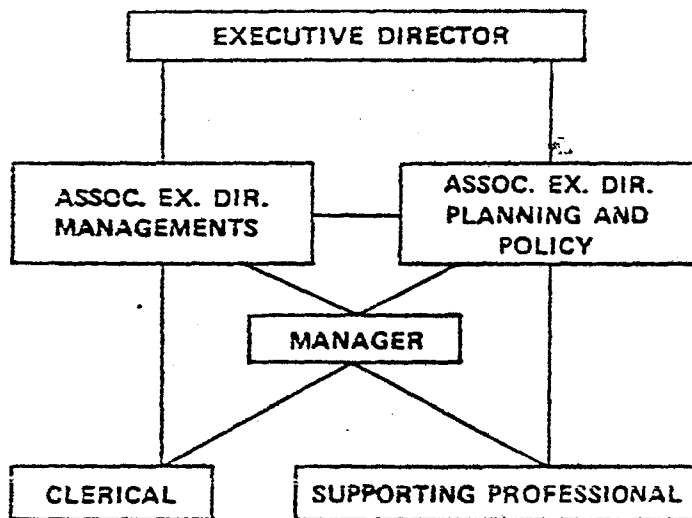
Accounting	Mathematics
Anthropology	Med. Chem.
Biomed. Computing	Med. Sociology
Clinical Pharmacy	Medicine
Drug Abuse	Pharmaceutics
Economics	Pharmacognosy
Education	Pharmacology
Epidemiology	Pharmacy
Evaluation	Pharm. Admin.
Family Studies	Philosophy
Finance	Planning
Hlth. Care Admin.	Psychology
Hlth. Ecology	Public Admin.
Hosp. Admin.	Public Health
Hosp. Pharmacy	Public Health Educ.
Law	Social Psychology
Management	Sociology
Marketing	Statistics

1.



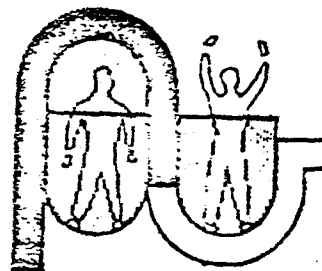
**PharmaSYST**

- a. *Principals* — Dean as permanent chairman, election from within for vice chairman and secretary.
- b. *Associates* — Principals will designate one person per discipline as Senior Associate.
- c. *Staff*



**ACTIVITIES**

- Conduct research on the basic applied levels, sponsored by outside agencies and firms, and unsponsored where related to College or Center needs and interests.
- Perform work pursuant to contracts in the health care organization, financing, evaluation, feasibility study and demonstration areas.
- Accept subcontracted portions of work from others where the work is in the purview of Center skill and experience.



— Submit unsolicited proposals for needed and desirable research endeavors, to agencies, government, firms.

— Conduct national symposia, conference and otherwise act as a vehicle for the coordination of studies in the area and agent for the dissemination of findings. Invitational conferences and workshops would be expected to be held.

— Production of a Publication Series of original papers such as monographs, pertinent dissertations, reprints, occasional reports and study final reports.

— Aid in educational endeavors and activities of the University of Pharmacy in particular.

— Provide consulting and management services as appropriate.

— Sponsorship of sabbatical fellowships, visiting professorships and postdoctoral fellowships for researchers in the pertinent areas of study to join the Minneapolis groups.

#### **Further Information**

is available and inquiries are invited. Please write:

PharmaSYST  
College of Pharmacy  
University of Minnesota  
Minneapolis, Minnesota 55455

**PharmaSYST**