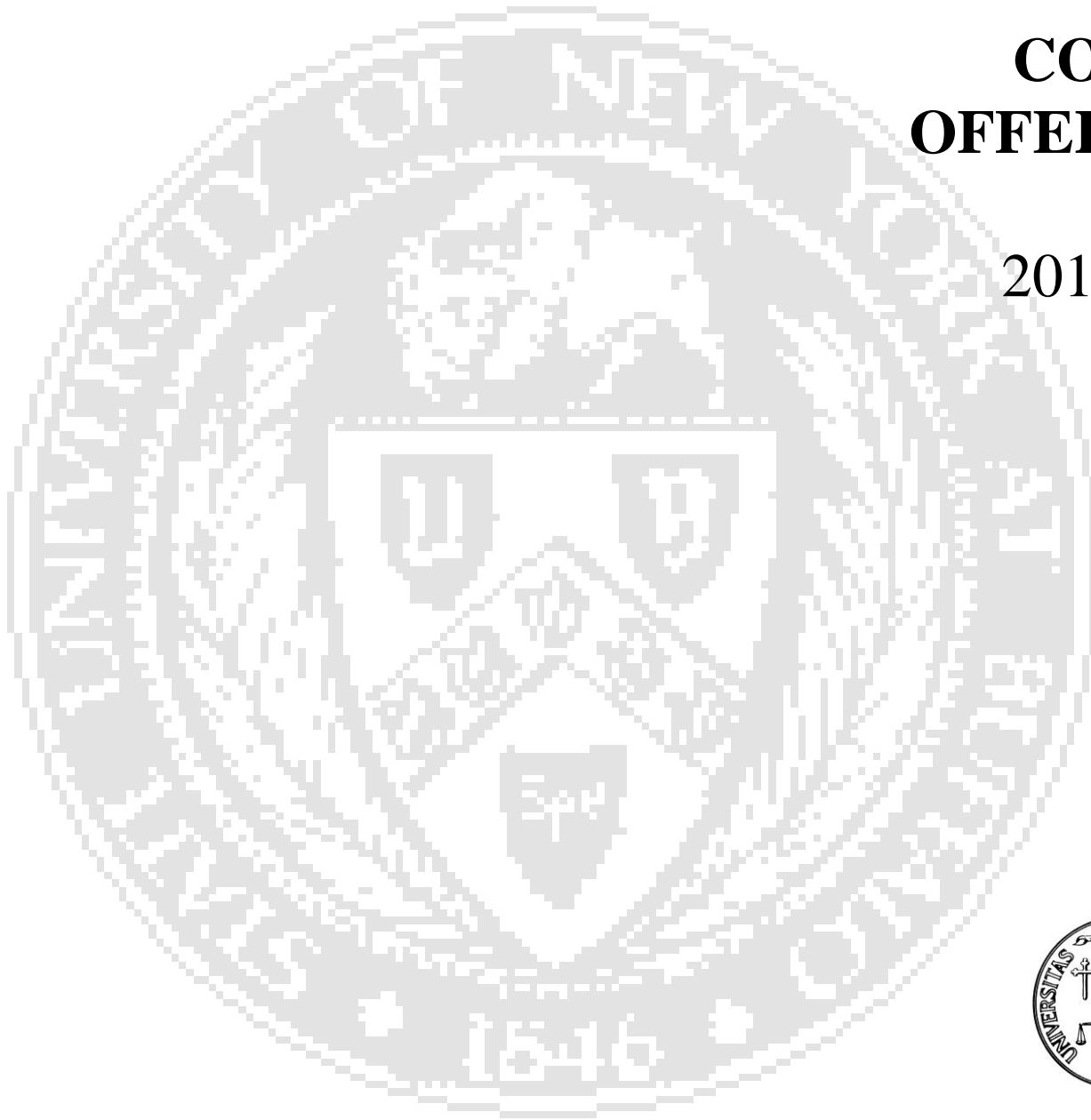


COURSE BOOK

COURSE OFFERINGS

2011-2012



**SCHOOL OF MEDICINE
AND BIOMEDICAL SCIENCES**

UNIVERSITY AT BUFFALO

Updated 2011

			M	T	W	T	F	S	S		
	1	June	a	27	28	29	30	1	2	3	July
	2			4	5	6	7	8	9	10	
	3			11	12	13	14	15	16	17	
	4			18	19	20	21	22	23	24	
	5		b	25	26	27	28	29	30	31	
	6			1	2	3	4	5	6	7	August
	7			8	9	10	11	12	13	14	
	8			15	16	17	18	19	20	21	
	9		c	22	23	24	25	26	27	28	
	10			29	30	31	1	2	3	4	September
	11			5	6	7	8	9	10	11	
	12			12	13	14	15	16	17	18	
Block 2	1	September	a	19	20	21	22	23	24	25	
	2			26	27	28	29	30	1	2	October
	3			3	4	5	6	7	8	9	
	4			10	11	12	13	14	15	16	
	5		b	17	18	19	20	21	22	23	
	6			24	25	26	27	28	29	30	
	7			31	1	2	3	4	5	6	November
	8			7	8	9	10	11	12	13	
	9		c	14	15	16	17	18	19	20	
	10			21	22	23	24	25	26	27	
	11			28	29	30	1	2	3	4	December
	12			5	6	7	8	9	10	11	
	Core Topics			12	13	14	15	16	17	18	
	Core Topics			19	20	21	22	23	24	25	
	Winter Break Dec. 24 - Jan. 8, 2012			26	27	28	29	30	31	1	January
				2	3	4	5	6	7	8	2012
Block 3	1		a	9	10	11	12	13	14	15	
	2			16	17	18	19	20	21	22	
	3			23	24	25	26	27	28	29	
	4			30	31	1	2	3	4	5	February
	5		b	6	7	8	9	10	11	12	
	6			13	14	15	16	17	18	19	
	7			20	21	22	23	24	25	26	
	8			27	28	29	1	2	3	4	March
	9		c	5	6	7	8	9	10	11	
	10			12	13	14	15	16	17	18	
	11			19	20	21	22	23	24	25	
	12			26	27	28	29	30	31	1	April
Block 4	1		a	2	3	4	5	6	7	8	
	2			9	10	11	12	13	14	15	
	3			16	17	18	19	20	21	22	
	4			23	24	25	26	27	28	29	
	5		b	30	1	2	3	4	5	6	May
	6			7	8	9	10	11	12	13	
	7			14	15	16	17	18	19	20	
	8			21	22	23	24	25	26	27	
	9		c	28	29	30	31	1	2	3	June
	10			4	5	6	7	8	9	10	
	11			11	12	13	14	15	16	17	
	12			18	19	20	21	22	23	24	

Orientation is June 27th

**THIRD YEAR
2011-2012**

Academic Year

MOD	MONTH	M	T	W	T	F	S	S	
B	JUNE	27	28	29	30	1	2	3	July 2011
		4	5	6	7	8	9	10	
		11	12	13	14	15	16	17	
		18	19	20	21	22	23	24	
C	JULY	25	26	27	28	29	30	31	
		1	2	3	4	5	6	7	August
		8	9	10	11	12	13	14	
		15	16	17	18	19	20	21	
D	AUGUST	22	23	24	25	26	27	28	
		29	30	31	1	2	3	4	September
		5	6	7	8	9	10	11	
		12	13	14	15	16	17	18	
E	SEPTEMBER	19	20	21	22	23	24	25	
		26	27	28	29	30	1	2	October
		3	4	5	6	7	8	9	
		10	11	12	13	14	15	16	
F	OCTOBER	17	18	19	20	21	22	23	
		24	25	26	27	28	29	30	
		31	1	2	3	4	5	6	November
		7	8	9	10	11	12	13	
G	NOVEMBER	14	15	16	17	18	19	20	
		21	22	23	24	25	26	27	
		28	29	30	1	2	3	4	December
		5	6	7	8	9	10	11	
H	DECEMBER	12	13	14	15	16	17	18	
		19	20	21	22	23	24	25	
		26	27	28	29	30	31	1	January 2012
		2	3	4	5	6	7	8	
I	JANUARY	9	10	11	12	13	14	15	
		16	17	18	19	20	21	22	
		23	24	25	26	27	28	29	
		30	31	1	2	3	4	5	February
J	FEBRUARY	6	7	8	9	10	11	12	
		13	14	15	16	17	18	19	
		20	21	22	23	24	25	26	
		27	28	29	1	2	3	4	March
K	MARCH	5	6	7	8	9	10	11	
		12	13	14	15	16	17	18	
		19	20	21	22	23	24	25	
		26	27	28	29	30	31	1	April
L	APRIL	2	3	4	5	6	7	8	
		9	10	11	12	13	14	15	
		16	17	18	19	20	21	22	
		23	24	25	26	27	28	29	May
M	MAY	30	1	2	3	4	5	6	
		7	8	9	10	11	12	13	
		14	15	16	17	18	19	20	
		21	22	23	24	25	26	27	
A	JUNE	28	29	30	31	1	2	3	June
		4	5	6	7	8	9	10	
		11	12	13	14	15	16	17	
		18	19	20	21	22	23	24	

Module begins June 27th

FOURTH YEAR SCHEDULE

2011-2012

ACADEMIC YEAR

Match Day, Thursday, March 15th

Graduation Day, Friday, April 27, 2012 (tentative, subject to change).

Department and Chairperson			Facility, Code and Location Key	
ANE	Anesthesiology Mark J. Lema, M.D., Ph.D.	X	Buffalo Psychiatric Center 400 Forest Avenue	B
BCH	Biochemistry Kenneth Blumenthal, Ph.D.	X	Buffalo Children's Hospital 219 Bryant Street	C
DER	Dermatology Animesh Sinha, M.D.	R	Deaconess Hospital 1001 Humboldt Parkway	D
EMM	Emergency Medicine Richard Braen, M.D.	G	Erie County Medical Center 462 Grider Street	E
FMD	Family Medicine Thomas Rosenthal, M.D.	E	Millard Fillmore Hospital 3 Gates Circle	F
GYN	Gynecology-Obstetrics Armando Arroyo, M.D. (Interim)	C	Buffalo General Hospital 100 High Street	G
MED	Medicine Anne Curtis, M.D.	E	Medical Tower Building 85 High Street	H
MIC	Microbiology and Immunology John Hay, Ph.D.	X	Kenmore Mercy Hospital 2950 Elmwood Avenue	K
NEU	Neurology Robert Sawyer, Jr., M.D. (Interim)	G	Combined Facilities	O
NSR	Neurosurgery L. Nicholas Hopkins, M.D.	F	Private Office 1237 Delaware Avenue	P
NMD	Nuclear Medicine Robert S. Miletich, M.D., Ph.D.	X	Roswell Park Cancer Institute Elm and Carlton Streets	R
OPH	Ophthalmology James Reynolds, M.D.	C	Sisters Hospital 2157 Main Street	S
ORS	Orthopedics Lawrence Bone, M.D.	C	Veterans Administration Medical Center 3495 Bailey Avenue	V
OTO	Otolaryngology Davis Sherris, M.D.	P	School of Medicine 3435 Main Street	X
PTH	Pathology & Anatomical Sciences Reid Heffner, M.D.	X	Mercy Hospital 585 Abbott Road	Y
PED	Pediatrics Teresa Quattrin, M.D.	C	Hauptman Woodward Medical Research Institute 585 Abbott Road	Z
PMY	Pharmacology Margarita Dubocovich, Ph.D.	X		
PGY	Physiology and Biophysics Harold Strauss, M.D.	X		
PTY	Psychiatry Steven Dubovsky, M.D.	E		
RAO	Radiation Oncology Michael Kuettel, M.D.	R		
RGY	Radiology Angelo DelBalso, MD, DDS, FACR	V		
REM	Lawrence Bone, M.D. Rehabilitation Medicine (Interim)	E		
STB	Structural Biology Robert Blessing, Ph.D. (Interim)	Z		
SUR	Surgery Merril T. Dayton, M.D.	C		
URO	Urology Gerald Sufrin, M.D.	G		

Students may pursue a research program in any department, through the designation of a 950 code, with departmental chairman or course coordinator approval.

Clinical Department Course Coordinators:

Anesthesiology	Dr. Mark Lema.....	829-6102
Dermatology	Dr. Craig Miller	845-8527
Dermatology (Buffalo Medical Group)	Dr. Robert Kalb	630-1102
Emergency Medicine	Dr. David Pierce	859-1993
Family Medicine	Dr. David Holmes (third year).....	829-3800
Family Medicine	Dr. Andrew Symons (fourth year)	829-3800
Gynecology-Obstetrics	Dr. Justicia-Linde	878-7804
Interdisciplinary Graduate Program	Dr. Richard Rabin	829-3398
Medicine	Dr. Susan Gallagher	859-1262
MD/MBA	Dr. David Milling	829-2802
MSTP (MD/PHD joint program)	Dr. Paul Knight	829-3582
Neurology	Dr. Margaret Paroski.....	829-2777
Neurosurgery	Dr. L.N. Hopkins	(ext. 2141) 887-5200
Nuclear Medicine	Dr. Robert S. Miletich	838-5889
Ophthalmology	Dr. James D. Reynolds	881-7916
Orthopaedic Surgery	Dr. Lawrence Bone	898-3810
Otolaryngology	Dr. David Sherris	884-5102
Pathology & Anatomical Sciences	Dr. Reid Heffner	829-2846
Pediatrics	Dr. Wayne Waz.....	878-7355
Psychiatry	Dr. Linda Pessar.....	898-4858
Radiation Oncology	Dr. Anurag Singh.....	845-1180
Radiology	Dr. Angelo DelBalso.....	862-8725
Surgery	Dr. Gregory Cherr	859-2349
Urology	Dr. Gerald Sufrin	859-2212

David A. Milling, M.D.
Senior Associate Dean for Student and Academic Affairs
Medical Education 829-2802

BASIC SCIENCE AND CLINICAL COURSES REQUIRED FOR MEDICAL STUDENTS
STATE UNIVERSITY OF NEW YORK AT BUFFALO

M.D. DEGREE CURRICULUM

First Year

Fall Semester

Gross Anatomy
Clinical Practice of Medicine
Medicine and Society
Fundamentals I: Molecules, Cells and
Molecular Genetics
Fundamentals II: Underlying Principles

Spring Semester

Clinical Practice of Medicine
Gastrointestinal System and Metabolism
Urinary Tract and Renal System
Musculoskeletal System and Integument
Hematology

Second Year

Fall Semester

Clinical Practice of Medicine
Human Cardiovascular System
Pulmonary System
Neuroscience and Behavior I

Spring Semester

Clinical Practice of Medicine
Neuroscience and Behavior II
Endocrine and Reproductive Systems and Life
Cycle

USMLE – Step 1 – Between Second and Third Year
(See USMLE section)

Third Year*

Family Medicine / Psychiatry
Pediatrics / Gynecology & Obstetrics
Medicine
Surgery
Dilemmas in Medicine
Electives (2)

Fourth Year*

Basic Neurology	NEU-801
Advanced Clerkship in Medicine	MED-802
Surgical Specialties	SUR- 800
Transition to Residency	IDM 810
Electives (5)	

Note: If SUR 800 and/or NEU 801 were taken as third year elective additional electives must be completed during fourth year. A total of 8 rotations must be completed during fourth year.

*Order is determined by lottery.

**STATE UNIVERSITY OF NEW YORK AT BUFFALO
SCHOOL OF MEDICINE AND BIOMEDICAL SCIENCES**

This compendium of course offerings includes descriptions of required and elective opportunities offered by the School of Medicine and its teaching hospitals during years one, two, three, and four of the medical curriculum. Students are advised by "career advisors" designated by each department, academic staff in the Office of Medical Education, and faculty in the pre-clinical program in planning and arranging course offerings. Students are required to record a passing grade in all required courses.

FIRST AND SECOND YEAR

The first and second years begin in August and continue through May of the following year. Students participate in a structured curriculum as outlined above. Elective courses are also available for first and second year students. Instructions for registration will be emailed to the student's UB address. Students must report and maintain complete up-to-date home addresses in the Office of Medical Education.

USMLE

Students can apply for Step 1 or 2 exam on-line at nbme.org or usmle.org. Verification signatures need to be obtained by dropping off your application to Dr. Schimpfhauser or Donna Harber in 131 BEB. In their absence, Philippa in the OME will sign application.

Prior to beginning the third year, students will be required to take Step I of the USMLE. The deadline for taking Step 1 will be established each year by the Office of Medical Education. Failure of the USMLE will result in the student being held out of the next clerkship to allow for successful re-examination, which must be completed prior to the beginning of the next block. Students will then be allowed to start pending the examination result. A second failure will require the student to be placed on leave of absence. The student will not be allowed to reenter the curriculum until a passing grade is recorded. Students are only allowed three (3) opportunities to pass Step I of the USMLE, before a recommendation for a dismissal from the School is made.

Fourth year students must meet the following Step 2 deadlines:

Step 2 Clinical Skills – December 1 of 4th year

Step 2 Clinical Knowledge – February 1 of 4th year (but we recommend taking it right after end of third year)

THIRD YEAR:

Family Medicine / Psychiatry
Pediatrics / Gynecology & Obstetrics
Medicine
Surgery
Dilemmas in Medicine
Core Topics in Medicine
Electives (2)

The third-year clerkship year begins with a mandatory orientation day. Students will enter the first clerkship the following day. Students are assigned to clinical clerkship groups by a lottery that utilize the facilities of hospitals and practice sites throughout the Western New York area. Instructions for registration will be e-mailed to the student's UB e-mail account; therefore students must report accurate e-mail addresses to Office of Medical Education, as well as providing current home addresses and phone numbers.

Under direct supervision, the student will have an opportunity to observe and participate in the care of patients with a wide variety of illnesses and is given progressively more responsibility as his or her skill develops. Educational experiences also include emphasis on lecture demonstrations of clinical problems, small-group problem-solving, conferences, and ward rounds. Increasing emphasis is placed on disease prevention and primary care. Explanation of clinical competence is addressed through multiple mechanisms.

There are four 12-week blocks of instruction, plus 2 weeks of intersession. Blocks will consist of:

Pediatrics and Gynecology & Obstetrics (6 weeks each)

Family Medicine and Psychiatry (6 weeks each)

Medicine (12 weeks total length): Inpatient (4 weeks); Outpatient (4 weeks); Elective (4 weeks)

Surgery (12 weeks total length): General Surgery (two 4-week periods); Elective (4 weeks)

Intersession (2 weeks)

Students may choose to take Pediatrics or Gynecology & Obstetrics during the first 6 weeks, with the other clerkship following to complete the block. The same is true of the Family Medicine and Psychiatry block.

There is a 4-week Elective section within the 12-weeks of Medicine and Surgery. Students will be allowed to request whether to do the elective first, second, or third within the block. A list of Elective courses will be provided.

MEDICINE: Students must attend the lecture series once a week during the entire 12 weeks. During the third year, students are not eligible to take an elective in MICU or critical care, nor can they take the fourth year Advanced Medicine rotation necessary for graduation.

SURGERY: Student will attend two 4-week blocks of General Surgery, and will have a 4-week elective. Neurology or Surgical Subspecialties may be taken during the third year Surgical elective time, the third year Medical elective time, or during the fourth year. During the Surgical elective block, all students are required to attend the core components of the Surgical clerkship (orientation, lectures, grand rounds and the exam/exit interview).

Intersession/Core Topics in Medicine. This course is graded S/U only. It is experiential, meaning that you must be present and actively participate in each session in order to get credit for that activity (much like BCLS and ACLS courses you may have taken). The majority of the time will be spent in discussion groups and workshops. There will be some outside reading and reflective exercises.

Vacation. There will be two weeks of vacation following the completion of Block 2. All students will be on vacation during this two-week period. Students will not be permitted to take vacation time other than the two-week winter break, and no out of town electives will be allowed during the third year.

Third Year Failure Remediation:

Any academic deficiencies from the third-year curriculum must be removed before promotion to the fourth year. A student who fails a clerkship clinically must repeat the entire clerkship. However, any student who passes the clerkship clinically, but fails the examination and needs to repeat the clerkship, can elect to repeat the entire clerkship (6 or 8 week period to be completed in the first block of the fourth year) or participate in a four week remedial experience (4 weeks long to be offered in the fourth year). This is available for a single clerkship failure only. Details of the remedial experience will be left to the discretion of the clerkship coordinator.

NOTE: Failure of a remedial experience will constitute a second clerkship failure, and render the student subject to dismissal from the School. If the student elects to repeat the entire clerkship and fails, this will also render the student subject to dismissal from the School.

FOURTH YEAR

The curriculum is designed so students may plan, with faculty advisement, a significant part of their educational program. The elective approach to curriculum affords students with different backgrounds and different aspirations an individual educational experience. Through the elective program, they are able to try out possible career choices, gain additional clinical experience, embark upon/conclude research work, or re-examine the basic medical sciences. Instructions for registration will be e-mailed to the student's UB e-mail account; therefore students must report and maintain complete up-to-date addresses in the Office of Medical Education.

Fourth-year students are required to take eight (8) four-week modules. Required modules in the fourth year include Neurology (NEU 801), Advanced Clerkship in Medicine (MED 802), Surgical Subspecialties (SUR 800), and Transition to Residency (IDM 810). All required courses must be taken in Buffalo. The eleven-month fourth year (ending with L module) affords students three modules of "unscheduled time." The M module in the fourth year may only be used to remediate a course failure or for students who are otherwise delayed.

NOTES:

- Required courses in Medicine, Neurology and Surgery will be determined by lottery. Changes will be made until the Friday after the lottery is held, no exceptions.
- Must be registered for module at least 4 weeks prior to start of module.
- Only two away programs may be taken at any one institution
- A program cannot be taken twice
- No more than 3 courses in any one department
- Research – up to two modules; not available to MSTP students
- No more than 4 out of town electives allowed (See Out of Town Electives below)
- No more than 1 International elective allowed. This counts as one of the four out of town electives allowed.
- No double registration for any module, except where an out of town elective is pending. Once out of town elective is set, other course must be deleted by drop/add form
- All drop and add forms must be signed (approved) by course director (**not** department chair) and then sent to OME
- All drop and add forms must be completed and in the OME no later than 4 weeks before module begins
- Any failure of course must be made up within 2 modules
- No retroactive registration is permitted for any course (local or away)

Out of Town Electives – Must be 4th year student in good standing

IMPORTANT: A CURRENT AFFILIATION AGREEMENT MUST BE IN PLACE BETWEEN UB AND THE TRAINING INSTITUTION.

A student wishing to participate in an out-of-town elective must discuss with our School's appropriate departmental chairperson or course coordinator the possibility or advisability of taking an out-of-town rotation in a comparable department. If there is agreement that a rotation is possible and advisable, then the student communicates directly with the desired program. If he or she is accepted to the program, the department may request confirming letters and/or program descriptions. The department then notes their approval/disapproval on the Out of Town Elective Form and forwards it to the Office of Medical Education for final approval/disapproval. A drop/add form must also be completed for registration purposes. Approvals of "away" programs are made on an individual basis based on academic value and student academic status.

USMLE Step 2

Step 2 CK and CS are both requirements for graduation. Students will only be verified by the School as eligible for Match participation if the following deadlines are met:

Step 2 CS December 31, 2011

Step 2 CK December 31, 2011

CLINICAL AFFILIATION AGREEMENTS AND STUDENT LIABILITY INSURANCE

OVERVIEW

The purpose of an affiliation agreement between UB and an affiliated institution is to advance UB students' educational programs in a particular educational discipline.

Why is a written Affiliation Agreement necessary? The State University of New York is considered an agency of the State of New York, and therefore, its liability is the same as the State of New York. The affiliation agreement sets forth the educational purposes of the arrangement; the responsibilities of each party; allocation of the risks; any insurance covering any risks; duration of the agreement; and how the parties will coordinate the clinical experience. Without an affiliation agreement, no academic credit can be earned and no medical liability coverage is provided.

SUNY'S INSURANCE FOR UB STUDENTS

For students who are participating in health-related clinical experiences, especially those with hands on in either patient care or laboratory testing, there is a risk of a lawsuit. Pursuant to the mandates of the policy, UB must have a written agreement between itself and the Host Institution in order to have insurance coverage extended to the student participating in that particular clinical program. Therefore, for health-related student affiliation agreements, SUNY purchases commercial insurance to cover malpractice claims

against students. Both defense costs and indemnification in the event of judgment or settlement are covered in the event of a lawsuit being filed naming the student as a Defendant. Without a written Affiliation Agreement in place, the student will not have coverage for either defense costs or indemnification if such a suit is brought by a third party.

A student is not covered when he or she shadows or does any type of health related clinical experience with a physician, nurse or any other health care provider who is a friend, relative or neighbor of the student, without a written agreement between UB and the Host Institution. In these cases, the student is solely liable for their actions because the student's activities are not under authority or consent of UB.

POLICY LIMITS

The current policy is a typical professional insurance contract with an amount not less than \$3 Million aggregate for bodily injury and property damaged combined single limit, the standard of the health care industry as determined by the New York State Health Department.

CLINICAL EXPERIENCES OUTSIDE THE U.S.A.

SUNY's Student liability policy does not cover affiliation agreements outside the continental United States. A student wishing to do a clinical experience outside the US would have to obtain their own policy of insurance, which can be quite expensive. Liability exposure is not limited just to professional liability. Insurance also covers legal defense costs, which can be quite expensive. In the past, SUNY has entered into several affiliation agreements with agencies in Ontario, Canada so long as the Host Institution signs SUNY's Standard Affiliation Agreement complete with the Exhibits.

ESTABLISHING AN AFFILIATION AGREEMENT

Any student who wishes to work in a physician's office, a research laboratory, or a hospital/clinic must do the following:

- (1) check in the Office of Medical Education (OME) to determine if an Affiliation Agreement with the host institution is currently in place.
- (2) if there is an Agreement in place, see number (4).
- (3) if currently there is no Affiliation Agreement, obtain and complete a "Student Affiliation form" from OME and return it to an Assistant Dean in OME at least six weeks before the experience is to begin.
- (4) if an Affiliation Agreement is currently in place or if a new one has been established, you must register for an appropriate course through appropriate channels.
- (5) under no circumstances is a student permitted to begin an experience without confirmation of an Affiliation Agreement.

Program Planning

Advisors and faculty as well as members of the Dean's staff in the Office of Medical Education are available to assist third- and fourth-year students in the program-planning process. Requests for special scheduling as well as for participation in programs with duration of greater than two months or greater than one month at the same institution must be brought to the attention of the Office of Medical Education and approved by the Fourth Year Committee. When determined beneficial for the student, individual programs may be modified at the approval of the Year Committee and Office of Medical Education.

GRADUATION HONORS

Students may qualify for Latin, research or thesis honors at graduation.

Students have the opportunity to apply for both research and thesis honors prior to graduation. Candidates interested in these honors must write a thesis for review by a special committee. Research honors simply require evidence of continuous research that has resulted in either publication(s) or presentation(s) at national meetings. For more information and applications for graduation honors please go to: www.smbs.buffalo.edu/ome/ome_academic.htm.

Visiting Students

Visiting students from other medical schools within the U.S. must successfully complete an application process in order to take fourth-year clinical electives at any of the School's affiliated hospitals or institutions. The Office of Medical Education administers this program. The tremendous demand for educational experiences by students' trained elsewhere, especially foreign-trained students far exceeds our ability to accommodate them. We have, therefore, established a policy that will keep open visiting student

opportunities for domestic medical students only. For information, students should call (716) 829-2802 for instructions on how to apply for visiting courses

Medical School acceptable grades are:

H = Honors

S+ = High Satisfactory

S = Satisfactory

U = Unsatisfactory (see below)

I = Incomplete (see below)

W = Withdrawal (cannot be removed from transcript)

R = Resigned (cannot be removed from transcript)

No grade should be awarded to students who qualify for a make-up examination. Once the grade is secured it should be presented to the OME in memo format for input into the University System and inclusion in the transcript.

Once awarded, Unsatisfactory, Withdrawal and Resigned grades will become part of the student's academic record. Remediation of Unsatisfactory grades will be credited at the next scheduled course offering. (For example: An Unsatisfactory grade in the Fall semester will show the remediation in the Fall of the next year.)

Incomplete grades are to be awarded only in the event of illness or an individual circumstance. Failure to complete course work on time requires an Unsatisfactory grade.

Withdrawal grades will become part of the student's academic record in the event a student fails to pass the USMLE and cannot begin clerkship on time.

Resigned grades will become part of the student's academic record in the event a student drops a course after the university date for dropping a course.

SUMMER OPPORTUNITIES

First year students can compete for summer opportunities at the University. Students selected for the Primary Care Externship Program and the Summer Research Fellowship Program will be registered (by the OME) in the Spring semester to enable their insurance coverage to continue through their summer experience. Final grades for these programs are provided by the project sponsor, preceptor or program director. Timely submission of this grade is the student's responsibility.

Students seeking liability insurance for summer experiences outside the University need to speak with the Associate Dean. Information on applying to summer programs is available on the web site: <http://wings.buffalo.edu/smbbs/ome/student/summer.htm>.

JOINT DEGREE PROGRAMS

Medical Scientist Training Program/MSTP

The first two years of training mirrors the syllabus of the medical student. Students are also required to attend a research seminar program to augment their education and reinforce their basic scientific knowledge. During the summer, between the first and second year, students are required to obtain research experience in two to three laboratories in order to acquaint themselves with different programs and departments related to their research interests. This is an important and indispensable exercise for MSTP students; however, our goal is for the student to make a commitment to a Department or a thesis advisor at the beginning of the second year.

After the completion of the second year, students will focus on the Ph.D. department of their choice. Students must qualify in the Ph.D. Department of their choice and undergo an admission procedure as that of any other student applying to that program.

The last year and a half of the MSTP are designed to provide students with the required medical rotations to broaden and strengthen their basic knowledge and skills in clinical medicine. During this period of time, students are also required to attend the MSTP Seminars. The required advanced clinical courses include Advanced Medicine, Surgical Specialties and Neurology. Once all the requirements have been met, students can adjust the remaining time in the program to conform to their individual needs. All elective courses must be approved by the OME.

MSTP students are expected to remain in good standing both as graduate students and medical students. Performance in the first two years will be evaluated based on Graduate School standards. Students are required a grade of High Satisfactory or better in all Medical School courses.

Summer prior to year 1 – optional to work in laboratories

YEAR 1 – All first year medical school courses

Summer after year 1 – Rotations in laboratories

YEAR 2 – All second year medical school courses, laboratory rotations, selection of research

YEARS 3, 4, and first half of 5 – Departmental graduate courses, Ph.D. Thesis Research, integrated clinical work, such as Weekly Grand Rounds in Clinical Program of Choice

YEARS second half of 5 and 6 – To be constructed and approved by Dr. Milling and MSTP Director prior to re-entry in medical curriculum. Schedules are determined by lottery.

*Research Seminar is required in all years of study.

*Please note: This 6 year program is presented as an optimal schedule. Depending on your research, it may take more than 6 years.

Third Year – Medical Curriculum

8 weeks of Medicine and Surgery

6 weeks of Pediatrics, Obstetrics/Gynecology, Psychiatry and Family Medicine

8 weeks of electives

Core Topics in Medicine

MSTP Research Seminar

Fourth Year – Medical Curriculum

4 weeks of Medicine, Surgery, Neurology

Transition to Residency

Minimum of 2 electives of 4 weeks in length to be approved by MSTP Steering Committee

MSTP Research Seminar

M.D./Ph.D. DEGREE CURRICULUM

<p>FIRST YEAR</p> <p>Fall Semester (MD) Gross Anatomy Clinical Practice of Medicine Medicine and Society Fundamentals I: Molecules, Cells & Molecular Genetics Fundamentals II: Underlying Principles Research Seminar</p> <p>Spring Semester Clinical Practice of Medicine Gastrointestinal System & Metabolism Urinary Tract & Renal System Musculoskeletal System & Integument Hematology Research Seminar</p> <p>Summer Seminar Ph.D. Laboratory Rotations</p>	<p>SECOND YEAR</p> <p>Fall Semester (MD) Clinical Practice of Medicine Human Cardiovascular System Pulmonary System Neuroscience & Behavior I Limited Laboratory Work Research Seminar</p> <p>Spring Semester (MD) Clinical Practice of Medicine Neuroscience & Behavior II Endocrine & Reproductive Systems & Life Cycle Limited Laboratory Work Research Seminar</p> <p>Summer Semester Ph.D. Thesis Research</p>
<p>THIRD – 1st HALF OF FIFTH YEAR</p> <p>Fall & Spring Semester (Ph.D.) Ph.D. Thesis Research * Weekly Grand Rounds in Clinical Program of Choice MSTP Research Seminar</p>	<p>2nd HALF OF FIFTH YEAR – SIXTH YEAR</p> <p>Fall & Spring (MD) Medicine (12 weeks) Surgery (12 weeks) Pediatrics (6 weeks) Family Medicine (6 weeks) Obstetrics & Gynecology (6 weeks) Psychiatry (6 weeks) Electives (2) (8 weeks) Electives are taken during MED and SUR blocks Core Topics in Medicine Research Seminar</p> <p>Fall & Spring (MD) Basic Clinical Neurology (4 weeks) Adv Clerkship in Medicine (4 weeks) Adv Clerkship in Surgery (4 weeks) Transition to Residency Elective** (4 weeks) Research Seminar (4 weeks)</p>
<p>*Sixth year if necessary</p>	<p>**Electives will be individualized to meet student's schedule & interests; approval by MSTP Steering Committee and OME required.</p>

MD/MBA Dual Degree Program

The MD/MBA Degree requires five years of education. Medical students will complete the first three years of Medical School curriculum. The fourth year will take place within the School of Management (see below). Please note: While you are in the School of Management your financial aid award will be decreased due to the decreased tuition charges. For further information please contact financial aid department. The fifth and sixth year will consist of a modified Medical School curriculum (see below).

The MBA portion of the dual degree program can only be taken after completion of the third year of medical school. If you were an early assurance medical student, you will be required to take the GMAT.

MD/MBA DEGREE CURRICULUM

First Year	Second Year
Fall Semester (MD) Gross Anatomy Clinical Practice of Medicine Medicine and Society Fundamentals I: Molecules, Cells and Molecular Genetics Fundamentals II: Underlying Principles Spring Semester (MD) Clinical Practice of Medicine Gastrointestinal System and Metabolism Urinary Tract and Renal System Musculoskeletal System and Integument Hematology	Fall Semester (MD) Clinical Practice of Medicine Human Cardiovascular System Pulmonary System Neuroscience and Behavior I Spring Semester (MD) Clinical Practice of Medicine Neuroscience and Behavior II Endocrine and Reproductive Systems and Life Cycle
Third Year	Fourth Year
Fall and Spring (MD) Medicine (12 weeks) Surgery (12 weeks) Pediatrics (6 weeks) Family Medicine (6 weeks) Obstetrics and Gynecology (6 weeks) Psychiatry (6 weeks) Dilemmas in Clinical Medicine (1 credit) Core Topics in Medicine (2 credits) Electives (2) (8-weeks) Electives are taken during MED and SUR blocks (4 weeks each)	Fall Semester (MBA) Financial Analysis & Reporting Behavior & Organizational Concepts for Management Economics for Managers Probability & Statistics for Management Financial Management (1/2 semester) Ethics & Corporate Governance (1/2 semester) Spring Semester (MBA) Financial Management (1/2 semester) Marketing Management Operations & Service Management Management Accounting Strategic management Business Communications (1/2 semester)
Fifth Year	
Fall Semester (MD) Basic Neurology NEU 801* Advanced Clerkship in Medicine MED 802 Surgical Subspecialties SUR 800* Transition to Residency IDM 810 Electives 2 Spring Semester (MBA) MBA Internship Electives 4 (MBA) *If taken as elective during third year, additional elective must be taken.	

Fall Semester (MBA)

- Financial Analysis & Reporting
- Behavior & Organizational Concepts for Management
- Economics for Managers
- Probability & Statistics for Management
- Financial Management (1/2 semester)
- Ethics & Corporate Governance (1/2 semester)

Spring Semester (MBA)

- Financial Management (1/2 semester)
- Marketing Management
- Operations & Service Management
- Management Accounting
- Strategic management
- Business Communications (1/2 semester)

Oral and Maxillofacial Surgery Certificate and M.D./MOMS

Students are accepted to the School of Medicine after already earning their DDS degree. They take a modified schedule in the first year of the program to develop the necessary clinical skills. In the last two years, the program is designed to provide students with the required medical rotations to broaden and strengthen their basic knowledge and skills in clinical medicine. Second and Third year schedules are decided by lottery. See M.D. Degree Curriculum for additional information.

MD/MOMS DEGREE CURRICULUM

First Year (MD)	Second Year
Fall Semester Clinical Practice of Medicine Spring Semester Clinical Practice of Medicine ** One Month Procedures course – whenever scheduled	Medicine (12 weeks) + ANE elective Surgery (12 weeks) + ANE elective Pediatrics (6 weeks) Family Medicine (6 weeks) Obstetrics and Gynecology (6 weeks) Psychiatry (6 weeks) Dilemmas in Clinical Medicine (1 credit) Core Topics in Medicine (2 credits)
Basic Neurology NEU-801 Advanced Clerkship in Medicine MED-802 Surgical Subspecialties SUR-800 Transition to Residency IDM-810 In addition to 5 elective courses chosen from the following: ANE 800 ANE 950 EMM 800 EMM 802 NSR 800 OPH 800 OTO 809 OTO 811 if given OTO 820 if given PED 810 PED 816 PED 818 RGY 800 SUR 801 SUR 820	

DEPARTMENT OF ANESTHESIOLOGY

The department's administrative office is located at Farber 252C, UB South Campus. The instructional program utilizes the facilities of the Buffalo General Hospital, Women and Children's Hospital of Buffalo, Erie County Medical Center, Millard Fillmore Hospital, Roswell Park Cancer Institute, and the Veterans Administration Medical Center.

Second Year

The staff assists the Department of Pharmacology in teaching the principles of anesthesia and the pharmacology of anesthetic drugs. Integrated with this didactic program, the Anesthesiology Department provides pertinent clinical demonstrations at the affiliated hospitals. Faculty members also lecture as part of the didactic programs in microbiology and physiology.

Also available are ten-week preceptorships in research in the various Anesthesiology Research Labs. These preceptorships are offered during the summer following the second year of medical school.

Third Year

A one-week anesthesiology exposure is provided for third or fourth year students within the context of the required Surgery 800 (Surgical Specialties) rotation. This experience is offered at Roswell Park Cancer Institute, Erie County Medical Center, and Buffalo General Hospital. The student receives clinical exposure with members of the anesthesiology staff in the operating rooms, recovery rooms, and ICU's. Practical instruction, preoperative evaluation, preparation of patients for anesthesia, methods of anesthesia, and postoperative care are considered within this integrated rotation.

Also available is a four-week Anesthesiology elective for third year students. This is primarily limited to the second half of the Junior year and is not an option for students visiting from other universities.

The objectives of this four-week rotation are to provide an opportunity for students to have direct patient management in the several areas touched by clinical anesthesiology and to point out the clinical applications of physiology and pharmacology as they pertain to anesthesiology.

Within this four-week elective, students will be responsible for the preoperative evaluation of patients (including H&P); and the ordering of preoperative medication. They are then allowed to actively participate in the administration of anesthesia in the operating room and are responsible for the postoperative care of the patient. The students will be under the direct supervision of an attending anesthesiologist in a ratio of no more than two students per faculty member.

Fourth Year

The objectives are the same as the four-week anesthesiology elective as described above for Junior students. This rotation is open to fourth year students for both semesters and students visiting from other universities via prior arrangements with the administrative office housed at Farber 252C, UB South Campus.

Research

Third and fourth year students may opt to take an elective in anesthesia research. They must make individual arrangements with the administrative office to participate in the research programs.

Prime interests of the department are related to the effects of anesthetic agents on respiratory and circulatory mechanisms. Studies include: acid-base balance and circulation of anesthetized man during passive hyperventilation, aspiration pneumonitis, cerebral blood flow, ventilation during and post anesthesia, uptake and distribution of inert gases and inhalation anesthetics, clinical investigation of various anesthetic agents and adjuvants, and analysis of NMDA receptors.

Anesthesia Elective at Another University

Senior medical students may elect to do a four-week anesthesia elective at another university by arrangements with the chair's office at that institution.

ANE-800 SUBINTERNSHIP IN ANESTHESIOLOGY 4 credits. Modules D-L. Prerequisite-Senior medical student or permission of OME and instructor. Number of students: 3. Contact departmental office (829-6105) for site location when registering.

The objectives of this rotation are to provide an opportunity for students at the level of a beginning resident for direct patient management in the several areas touched by clinical anesthesiology and to point out the clinical applications of physiology and pharmacology with respect to clinical anesthesiology.

The students will be responsible for preoperative evaluation of patients (including history and physical); the ordering of preoperative medication; then be allowed to actively participate in the administration of anesthesia in the Operating Room; and will be responsible for the postoperative care of the patient. The students will also be provided an opportunity to participate in the management of unconscious patients; cardiopulmonary resuscitation in the hospital; and in the management of chronic pain problems. The students will be under the direct supervision of an attending anesthesiologist in a ratio of no more than two students per faculty member.

The students will be given an opportunity to acquire advanced clinical skills of placement of arterial central venous catheters, endotracheal tubes, sophisticated monitoring of pressures, use of ventilators, lumbar puncture, and nerve blocks.

ANE-890 COURSE AT OTHER UNIVERSITY 4 credits. Modules B-L. Prerequisite-Senior medical student. Number of students: 4.

By arrangement with other university and chairman of Department of Anesthesiology.

ANE-950 RESEARCH 4 credits. Prerequisite-Senior medical student or permission of OME and instructor. Number of students: 2. Contact departmental office (829-6105) for site location before registering.

Students may have an opportunity to work with a faculty member on a research project.

DEPARTMENT OF DERMATOLOGY

The Department of Dermatology participates in patient care at Buffalo General Hospital, Veterans Administration Medical Center, Children's Hospital, and Roswell Park Cancer Institute. In addition to outpatient clinics, the department provides inpatient care, inpatient consultations, dermatopathology services, dermatologic surgery, and clinical and basic science research. Educational programs are available for undergraduate medical students, primary care residents, and continuing education for dermatologists in the community. The Buffalo Rochester Dermatologic Society meets quarterly during the academic year.

Fourth-year elective courses for undergraduate medical students are integrated into the other educational activities of the department. Students will be exposed to common skin disorders such as acne and psoriasis as well as less well known disorders such as mycosis fungoides and the bullous dermatoses. The overall goal of the fourth-year electives is to understand the contribution of the field of dermatology to complete patient care.

DER-800 CLINICAL DERMATOLOGY 4 credits. Contact departmental office for site location. Modules C-H and J-A. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Miller, Coordinator (845-8527). Number of students: 2 Suggested Text: *Principles of Dermatology – Lookingbill and Marks.*

During this elective, the student will:

- (1) become familiar with the anatomy of the skin, adnexal structures, general function, and pathological processes;
- (2) learn to describe skin lesions by morphology and distribution;
- (3) learn to recognize common skin disorders and understand diagnostic methods and treatment;
- (4) understand the contribution of the dermatologist, dermatopathologist, and the dermatologic surgeon in the care of skin disorders.

Students are exposed to adults and children while attending clinics at selected affiliated hospitals based on scheduling. The rotation is solely an ambulatory care experience.

DER-800 CLINICAL DERMATOLOGY 4 credits. Coordinator: Dr. Robert Kalb. Location: 295 Essjay Road, Williamsville, NY 14221. Modules B-M (module A also available). Prerequisite-Senior medical student or permission of OME and instructor. Number of students: 3. Suggested Text: *Principles of Dermatology – Lookingbill and Marks.*

This is solely an ambulatory care experience. Monday through Friday students see patients in the office on Essjay road. This is a very busy dermatology office. On Thursday afternoons students attend the clinic with dermatology residents at Buffalo General Hospital.

During this rotation the student will:

- Learn to describe skin lesions by morphology and distribution
- Learn to diagnose and treat common skin disorders
- Understand the role of the dermatologist, dermatopathologist and dermatologic surgeon in the care of skin disorders

The medical student is given ample autonomy and responsibility in the office. Responsibilities of the student include:

- Taking a relevant history from each patient
- Performing skin exams
- Giving local anesthesia and IM injections
- Assisting and performing skin biopsies and removal of lesions
- Formulating a treatment plan
- Providing patient information regarding their conditions
- Recording the patient's visit in their chart
- Calling patients with the results of their biopsies

Because the dermatology elective is oversubscribed there is a six week notice required to drop the elective. The only exception to the six week rule would be to arrange for another student to take your place.

DER-890 COURSE AT OTHER UNIVERSITY 4 credits. Contact department before registering. Prerequisite-Senior medical student.

By arrangement with other university and University at Buffalo Department of Dermatology. Contact Dr. Miller.

DER-950 RESEARCH 4 credits. Prerequisite-Senior medical student or permission of OME and instructor. Contact department regarding research possibilities before registering.

DEPARTMENT OF EMERGENCY MEDICINE

EMM-550 INTRODUCTION TO EMERGENCY MEDICINE 2 credits. Fall and Spring semester. First and Second year medical students. Students will meet with their assigned preceptor for 24 hrs. total during the semester (times to be arranged between the student and their preceptor). Course Coordinator: Dr. David Pierce (859-2460). Number of students: 25

This is an elective course for students who are interested in an emergency department experience that incorporates working with an EM attending at one of the consortium emergency departments. Students will be assigned to a single emergency physician for the entire course. Responsibilities will begin with observation of emergency department patient care. With increased experience, students will have the opportunity to evaluate and present patients to attending emergency physicians. Students will be given the opportunity to perform skills such as I.V., catheter insertion, basic suturing, X-ray and EKG interpretation. The student's grade will be based on participation, ability to assimilate information, ability to perform skills taught, and an ability to interact effectively with patients.

EMM-800 EMERGENCY MEDICINE 4 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. Course Coordinator Dr. David Pierce; Number of students: 8. Contact departmental office (859-2460) for additional information. Students will be assigned to clinical sites by Dr. Pierce.

Students taking the Emergency Medicine rotation in Buffalo will work in one of the affiliated emergency departments under the guidance of one of the emergency physicians. Patients with a wide variety of illnesses and conditions will be assigned randomly to students. The student will actively participate in the initial evaluation and stabilization of these patients, will learn about the interaction between emergency departments and pre-hospital care providers, will learn the pathophysiology and acute presentations of disease and learn the appropriate disposition of acutely sick and injured patients. Students will be expected to work in the affiliated emergency department on a variety of shifts (some weekends, some evenings, some days) to learn that patients and their needs sometimes differ according to the time and day of presentation. Students will be expected to attend EM Grand Rounds and the student lecture series.

Upon completion of the course, the student should be able to evaluate and initially manage a variety of medical, surgical and trauma cases. Additionally, the student will learn a variety of skills including many outpatient minor surgery techniques, acute cardiac care, orthopedics, ultrasound, lumbar puncture, arthrocentesis, intubation, CPR.

EMM-802 ADVANCED CLERKSHIP IN EMERGENCY MEDICINE 4 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. Successful completion of EMM-800. Course Coordinator: Dr. David Pierce. Number of students: 5. Contact departmental office (859-2460) for additional information.

During this rotation, students will obtain history, do physical examinations and present problems to attending/resident and, in consultation, carry out ancillary investigations such as laboratory tests and X-rays. They will, in consultation, interpret results of such tests and actively participate in treatment. There will be discussions/seminars on specific problem areas, presented by the instructors and the students. Students will also follow-up on management of outpatient surgical problems in the Surgical Revisit Clinic. Students will be expected to attend EM Grand Rounds and the student lecture series.

Upon completion of the rotation, students should be able to carry out the initial management of Emergency Room patients, including trauma; adequate history and physical examinations with reference to the specific problem in the Emergency Room setting; recognize skeletal trauma on X-rays as well as other radiological abnormalities as relating to the outpatient situation; recognize problems needing specialized management and consult appropriate specialists; and carry out diagnostic and therapeutic procedures including arterial blood gasses, insertion of IV, urinary, nasogastric catheters, incision and drainage of abscesses, appropriate local anesthesia, suturing superficial lacerations, application and removal of plaster casts, surgical dressings and splints.

Students who have successfully completed the EMM800 (Introduction to Emergency Medicine) course are eligible for the student electives in either Emergency Medicine Ultrasound or Emergency Medicine Services (EMS). The elective in Ultrasound will focus on learning basic ultrasound imaging techniques in the emergency department. At the end of the rotation the student will be familiar with the basic techniques that will aid in the diagnosis of abdominal, cardiac and traumatic disorders. The EMS rotation will provide the student with the necessary exposure to understand and become involved in Buffalo's EMS system. The student will be given opportunities to experience the EMS system firsthand through lectures, ambulance/helicopter ride-alongs and attending regional EMS meetings. The electives in ultrasound and EMS require prior authorization by Dr. Pierce. The courses will be offered on either a bi-annual or quarterly basis depending on enrollment and interest. Interested students should register for the EMM802 (Advanced Emergency Medicine) and contact the course coordinator for information on start times.

EMM-950 EMERGENCY MEDICINE RESEARCH 4 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. Successful completion of EMM-800. Dr. Ronald Moscati, Dr. David Pierce and Emergency Medicine faculty. Number of students: 4. Contact departmental office (859-2460) before registering.

Students interested in Emergency Medicine Research will have an opportunity to participate in the ongoing research of the department or may elect to do research in areas related to emergency medicine. These areas include, but are not limited to, cardiac resuscitation, initial burn and trauma resuscitation, emergency medical services (EMS), disaster medicine, toxicology, and acute clinical care. The goal of the course is to teach the student how to approach a research topic, how to conduct that research, and how to prepare information gained for publication.

DEPARTMENT OF FAMILY MEDICINE

The Department of Family Medicine encompasses a large and diverse group of individuals in a variety of settings who share the common goal of providing high quality, comprehensive health care to patients and their families. The department presently includes 21 full-time faculty, 85 volunteer faculty and 47 residents. In addition to utilizing busy academic ambulatory practices and inpatient services at three teaching hospitals (Buffalo General, Erie County Medical Center, and Millard Fillmore Suburban), our teaching program relies heavily upon a network of dedicated community-based family physician teachers. Along with our central focus of providing family-centered primary care to individuals of all ages, a variety of special interests are reflected in the clinical activity, research, and educational programs of the department. These include Prevention and Wellness, Maternal and Child Health, Geriatrics, Rural Health Care, Global Health, and Urban Family Medicine (with an emphasis on the health care needs of traditionally underserved populations). Medical student education is given the highest priority in the Department of Family Medicine, with course offerings available in all four years of the curriculum. Clinical training is based on individualized instruction and close one-to-one relationships between attending physicians and students. Classroom work relies primarily on small group discussions, active student participation, problem-based learning, and self-directed study. Emphasis is placed on communication and interviewing skills, the doctor-patient relationship, the bio-psycho-social-spiritual approach to patient care in the context of family and community, continuity and comprehensiveness of care, health promotion and disease prevention, clinical problem solving and rational therapeutics, as well as the diagnosis and management of common illnesses

FMD-599-0 INDEPENDENT STUDY IN FAMILY MEDICINE *1-4credits (by special arrangement with faculty sponsor).*

Prerequisite-Prior approval by Dr. David Holmes. All members of faculty. Number of students: unlimited.

Proposals for independent study must include a detailed written program description including goals and objectives, methods of study, faculty supervision, means of evaluation, and educational rationale. Proposals must be accompanied by a letter of support from the faculty sponsor. Academic credit will generally be contingent upon the completion of a written project. All independent study programs must be approved by the course director prior to the start of the module.

FMD-699-O RESEARCH IN FAMILY. *1-4credits (by special arrangement with faculty sponsor). Prerequisite-Prior approval by*

Dr. David Holmes. All members of faculty. Number of students: unlimited.

Students are encouraged to participate in research activities under the supervision of faculty in the Department of Family Medicine. Students may assist faculty in ongoing projects or may seek faculty sponsorship of student-initiated research. Research rotations may extend from one to several modules according to individual student scheduling needs and within the constraints of the medical school's policies. Students wishing to obtain credit for research modules must identify a faculty member willing to serve as their sponsor and submit a proposal and letter of support from their sponsor to the course director for his approval. The proposal must include a written description of the project including goals, objectives, methods, faculty supervision, means of evaluation and educational rationale.

***FMD-700 FAMILY MEDICINE CLERKSHIP** *Blocks 1-4. Contact departmental office for site location. Prerequisite-Junior medical student. Family Medicine faculty. This is a required six-week junior-year clerkship. Dr. David Holmes.*

The goals of this course are to teach medical students the basic knowledge, skills, and attitudes involved in the discipline of Family Medicine, primarily in the diagnosis and management of common undifferentiated problems of patients of all ages in the ambulatory setting, and to promote independent learning, critical thinking, and problem-solving skills. The course consists of two components, a clinical preceptorship and small-group teaching sessions. They will have the opportunity to see family medicine patients in various urban, suburban, and rural inpatient and outpatient settings, including home visits, nursing home visits, night call, and the coordination of patient care with community social agencies. The tutorial component consists of problem-based learning and independent study. At an orientation on the first day of the clerkship, each student will receive a detailed syllabus describing clerkship objectives, responsibilities, course curriculum, and student evaluation.

FMD-800 SUBINTERNSHIP IN FAMILY MEDICINE *4 credits. Modules B-L. Prerequisite-Senior medical student. Dr. David Holmes. Number of students: 3*

Held at Erie County Medical Center, Millard Fillmore Suburban Hospital and Buffalo General Hospital. Make arrangements with departmental coordinator for the module you are interested in before registering.

The goal of the subinternship in Family Medicine is to provide students with an intensive experience in the care of hospitalized patients. The subintern will act as the primary physician (under the supervision of Family Medicine residents and faculty) for a panel of

patients admitted to the Family Medicine Inpatient Service (FMIS). The subintern will be responsible for all aspects of the care of his or her patients, including admission history and physical, diagnostic and treatment plan, daily progress notes, discharge planning, family communications, and patient education. The student will participate in all educational activities and conferences and will be expected to present his or her patients at daily attending rounds. In addition to caring for adults with medical illnesses, the subintern may have the opportunity to attend women on labor and delivery, and participate in the care of newborns in the Delivery Room and the Nursery. The number of patients on the service (and in particular the number assigned to the subinterns) is deliberately limited so as to facilitate the teaching functions of the rotation, permit attendance at conferences, and allow adequate time for student-patient interactions and independent study. Topics given particular attention during the subinternship include: history taking and physical examination; differential diagnosis; the pathophysiology of disease; clinical decision making; rational selection and interpretation of diagnostic tests; hospital therapeutics; use of consultants; discharge planning; patient education; and the interaction of illness with psychosocial factors, family, and community environment.

Core Curricular Competencies

- Provide quality medical care for hospitalized patients.
- Access and manage acute and chronic medical problems.
- Provide anticipatory health care using education, risk reduction, and health enhancement strategies.
- Provide and coordinate comprehensive care of complex and severe problems using biomedical, social, personal, economic, and community resources, including consultation and referral.
- Establish effective physician-patient relationships by using appropriate interpersonal communication skills to provide quality health care.

Course Objectives

By the completion of the fourth-year Family Medicine Subinternship, the medical student is expected to possess the knowledge, attitudes, and skills needed to:

- Demonstrate a high degree of integrity and excellence in professionalism
- Demonstrate the ability to take an accurate, problem-focused patient history
- Demonstrate the ability to perform a complete and accurate physical examination appropriate to the patient's complaint
- Demonstrate the ability to give a complete, accurate and organized case presentation of a patient encounter.
- Demonstrate the ability to write accurate, well-organized complete history and physical exam notes and problem-focused progress notes
- Identify acute and chronic illnesses and formulate an adequate assessment and plan for each problem
- Demonstrate adequate comprehension of basic pathophysiology and relate it to patients' problems
- Demonstrate adequate utilization of lab and other parameters
- Use time in a fairly efficient manner
- Identify and address preventive medicine needs of patients
- Demonstrate the ability to provide patients with health education in terms that can be easily understood
- Demonstrate understanding of whole person health care using the bio-psycho-social-spiritual model
- Develop good rapport with patients and demonstrate empathy toward them
- Develop good rapport and work well with staff and providers
- Demonstrate the use of appropriate interpersonal communication skills
- Accomplish all work expected by the attending and senior resident
- Demonstrate evidence of reading about the problems of patients seen in the hospital and researching answers to questions that arise.
- Demonstrate attention to patient safety issues, including legible handwriting.

FMD-820 Addiction Medicine 4 credits. Modules B-L. Prerequisite-Senior medical student. Dr. Richard Blondell. Number of students: 1 per block. Held at Sheehan Hospital.

The goal of the elective is to learn how to care for patients who have addictive disorders. Areas of training include: screening, interventions, detoxification, outpatient and inpatient rehabilitation and monitoring recovery. Clinical time will be spent on: a) the inpatient detoxification unit at Sheehan, b) outpatient and inpatient rehab units, c) emergency rooms and d) addiction consult services. Readings, scholarship work, and one-on-one interactive discussions with attending physicians will compliment the students' experiences with direct patient care.

Core Curricular Competencies

- Provide addiction care for individuals
- Provide anticipatory health care using education, risk reduction, and health enhancement strategies.
- Address the whole person using the bio-psycho-social-spiritual model of care and refer patients to specialists and community resources as needed
- Establish effective physician-patient relationships by using appropriate interpersonal communication skills and cultural sensitivity to provide quality health care.

Course Objectives

By the completion of the Addiction Medicine elective, the medical student is expected to possess the knowledge, attitudes, and skills needed to:

- Demonstrate a high degree of integrity and excellence in professionalism.
- Demonstrate the ability to take an accurate, problem-focused patient history
- Demonstrate the ability to perform a complete and accurate physical examination appropriate to the patient's complaint.
- Demonstrate the ability to give a complete, accurate and organized case presentation of a patient encounter.
- Demonstrate the ability to write an accurate, well-organized problem-focused progress note
- Demonstrate knowledge and understanding regarding the diagnosis and treatment of patients with addictions
- Demonstrate adequate comprehension of basic pathophysiology and relate it to patients' problems
- Demonstrate adequate utilization of lab and other parameters
- Use time in a fairly efficient manner
- Identify and manage preventive medicine needs of patients
- Demonstrate the ability to provide patients with health education in terms that can be easily understood
- Demonstrate understanding of whole person health care using the bio-psycho-social-spiritual model
- Develop good rapport with patients and demonstrate empathy toward them
- Develop good rapport and work well with staff and providers
- Demonstrate the use of appropriate interpersonal communication skills
- Accomplish all work expected by the attending
- Demonstrate evidence of reading about the problems of patients seen and researching answers to questions that arise
- Demonstrate attention to patient safety issues, including legible handwriting.

FMD-830 Primary Care Diagnostic Imaging 4 credits. Modules B-L. Prerequisite-Senior medical student. Drs. Serghany, Gerow, and Feld. Number of students: 2 per block. Held at Western New York MRI.

The scope of this imaging course includes: physics of imaging, processes involved in the use of imaging, image storage, the use of computer-assisted imaging programs, magnetic resonance imaging, computed tomography, myelography, discography, radionuclide imaging, mammography, fluoroscopy and ultrasonography. The principles of x-ray positioning and the effects of ionizing radiation on biological systems will be covered. Practical experience will include evaluation/review of imaging studies and interpretation.

Course Objectives:

Upon completion of this course, the student will be able to:

- Identify the value of using imaging technology
- Interpret imaging findings
- Correlate imaging findings with patient histories, physical examination and relevant laboratory findings
- Attribute importance to case management and referral and follow-up for patients experiencing medical pathologies
- Demonstrate computer skills in the storage and retrieval of radiographic findings and in the use of computer-assisted Diagnostic programs; and
- Develop growing competency in the use of imaging interpretation and mark-up skills.

FMD-840 PRIMARY AMBULATORY CARE 4 credits. Modules B-L. Contact departmental office for site location. Prerequisite-Senior medical student or permission of OME and instructor. Dr. David Holmes. Number of students: 4

The goals of the rotation are to enable students to observe and participate in, on an intensive basis, the full range of primary care delivery by a family physician. Assignments for this course can be made in a variety of settings: urban, suburban, inner city, rural, or a family medicine center. Every effort will be made to accommodate students with their preference. Students will observe and assist in

the care of both ambulatory and hospitalized patients. This will include medical emergencies, deliveries, and some minor surgery, in addition to the more common ambulatory problems.

Core Curricular Competencies

- Provide primary medical care for individuals and families as the physician of first contact and continuing care in health as well as in illness.
- Assess and manage acute and chronic medical problems.
- Provide anticipatory health care using education, risk reduction, and health enhancement strategies.
- Provide continuous as well as episodic health care, not limited by a specific disease, patient characteristics, or setting of the patient encounter.
- Provide and coordinate comprehensive care of complex and severe problems using biomedical, social, personal, economic, and community resources, including consultation and referral.
- Establish effective physician-patient relationships by using appropriate interpersonal communication skills to provide quality health care.

Course Objectives

By the completion of the Primary Ambulatory Care elective, the medical student is expected to possess the knowledge, attitudes, and skills needed to:

- Demonstrate a high degree of integrity and excellence in professionalism.
- Demonstrate the ability to take an accurate, problem-focused patient history
- Demonstrate the ability to perform a complete and accurate physical examination appropriate to the patient's complaint.
- Demonstrate the ability to give a complete, accurate and organized case presentation of a patient encounter.
- Demonstrate the ability to write an accurate, well-organized problem-focused progress note and complete patient profile.
- Identify acute and chronic illnesses and formulate an adequate assessment and plan for each problem
- Demonstrate the ability to perform office procedural skills, such as pap smears, blood draws, vital signs, delivery of immunizations, ECG's, peak flows, finger sticks,
- Demonstrate adequate comprehension of basic pathophysiology and relate it to patients' problems
- Demonstrate adequate utilization of lab and other parameters
- Use time in a fairly efficient manner
- Identify and manage preventive medicine needs of patients
- Demonstrate the ability to provide patients with health education in terms that can be easily understood
- Demonstrate understanding of whole person health care using the bio-psycho-social-spiritual model
- Develop good rapport with patients and demonstrate empathy toward them
- Develop good rapport and work well with staff and providers
- Demonstrate the use of appropriate interpersonal communication skills
- Accomplish all work expected as outlined in the syllabus, by the preceptor, and by the small group facilitator
- Demonstrate evidence of reading about the problems of patients seen in the office and researching answers to questions that arise in the office
- Demonstrate attention to patient safety issues, including legible handwriting.

FMD-850 PRIMARY CARE FOR PEOPLE WITH DISABILITIES 4 credits. Modules B-L. Contact departmental office for site location. Prerequisite- Senior medical student or permission of OME and instructor. Dr. Andrew Symons. Number of students: 2

Students will spend four weeks at various local clinics serving patients with disabilities. The clinical sites are community partners that provide primary care services for patients with disabilities, as well as ancillary services such as physical and occupational therapy. Students will have a precepted experience in the primary care clinic with integrated experience in the interdisciplinary elements of the center. This elective will better prepare medical students to function professionally and appropriately within the medical environment and provide effective and compassionate care to patients with disabilities.

FMD-890-O COURSE AT OTHER UNIVERSITY 4 credits. Modules B-L. Prerequisite-Senior medical student. Supervising faculty must be Board Certified faculty physicians with faculty appointment in a university Department of Family Medicine. Dr. David Holmes.

By arrangement with department chairman, University at Buffalo, or course coordinator. Please note requirements for non-UB faculty member assuming supervisory responsibility for student. It will be the student's responsibility to provide or obtain needed information regarding the nature of, the experience. Credit for required courses cannot be satisfied through this elective.

FMD-890-A CROSS-CULTURAL MEDICINE 4 credits. Offered once per year in the Spring semester. Prerequisite-Senior medical student. Minimum rotation, four weeks. By arrangement with Dr. David Holmes.

This elective will allow senior medical students to work under supervision in selected clinical sites in developing countries. The purpose is to require practice in settings where students must rely on fund of knowledge, history, and examination with minimal technological support. Students will be incorporated into the clinical team and provide, under supervision, a broad range of ambulatory and inpatient care. Students will enhance skills in diagnosis of undifferentiated presenting complaints; improve their judgment with respect to use of diagnostic and therapeutic procedures; develop an appreciation for social, cultural, and economic factors in the presentation, etiology, course, and management of illness; improve their sensitivity to health consequences of public policy and economics; sharpen their understanding of preventive intervention from a public health perspective; increase consciousness of cost implications of clinical decisions.

FMD-899 INDEPENDENT STUDY 4credits. All modules(by special arrangement with faculty sponsor). Prerequisite-Senior medical student or permission of OME and instructor. Prior approval by Dr. David Holmes. All members of faculty. Number of students: unlimited.

Proposals for independent study must include a detailed written program description including goals and objectives, methods of study, faculty supervision, means of evaluation, and educational rationale. Proposals must be accompanied by a letter of support from the faculty sponsor. Academic credit will generally be contingent upon the completion of a written project. All independent study programs must be approved by the course director prior to the start of the module.

FMD-900 FAITH, MEDICINE AND END-OF-LIFE CARE 4 credits. Modules B-L. Prerequisite-Senior medical student with permission of Dr. David Holmes. Number of students: 2

The students will work directly with Hospice staff, hospital chaplains, and community physicians who practice whole person health care using the bio-psycho-social-spiritual model. The goal of this course is to provide learning opportunities that will enable students to develop competencies and meet the objectives described below.

Core Curricular Competencies

- Provide primary medical care, using the bio-psycho-social-spiritual model of healthcare, for individuals and families, as the physician of first contact in health as well as in illness.
- Assess and manage acute and chronic medical problems.
- Provide anticipatory health care using education, risk reduction, and health enhancement strategies.
- Provide and coordinate comprehensive care of complex and severe problems using biomedical, social, personal, economic, and community resources, including consultation and referral.
- Establish effective physician-patient relationships by using appropriate interpersonal communication skills and cultural sensitivity to provide quality health care.

Course Objectives

By the completion of the Cross Cultural Medicine elective, the medical student is expected to possess the knowledge, attitudes, and skills needed to:

- Demonstrate a high degree of integrity and excellence in professionalism
- Demonstrate the ability to take an accurate, problem-focused patient history
- Demonstrate the ability to perform a complete and accurate physical examination appropriate to the patient's complaint
- Demonstrate the ability to give a complete, accurate and organized case presentation of a patient encounter.
- Demonstrate the ability to write an accurate, well-organized problem-focused progress note and complete history and physical exam
- Identify acute and chronic illnesses and formulate an adequate assessment and plan for each problem
- Demonstrate adequate comprehension of basic pathophysiology and relate it to patients' problems
- Demonstrate adequate utilization of lab and other parameters
- Use time in a fairly efficient manner
- Identify and manage preventive medicine needs of patients

- Demonstrate the ability to provide patients with health education in terms that can be easily understood
- Demonstrate understanding of whole person health care using the bio-psycho-social-spiritual model
- Develop good rapport with patients and demonstrate empathy toward them
- Develop good rapport and work well with physicians, chaplains and staff
- Demonstrate the use of appropriate interpersonal communication skills
- Accomplish all work expected by the preceptor and chaplain
- Demonstrate evidence of reading about the problems of patients seen in the office and researching answers to questions that arise in the office
- Demonstrate attention to patient safety issues, including legible handwriting.
- Demonstrate understanding of the role faith plays in one's health and well-being
- Demonstrate knowledge and understanding of different faiths
- Demonstrate knowledge and understanding of the role of hospital and Hospice chaplains and when to refer patients to them
- Demonstrate knowledge and skills in taking a spiritual history and addressing issues relating to faith
- Demonstrate knowledge and skills in caring for the whole person using the bio-psycho-social-spiritual model
- Demonstrate knowledge and skills regarding end-of-life care

FMD-950 RESEARCH IN FAMILY MEDICINE 4credits. All modules (by special arrangement with faculty sponsor).

Prerequisite-Senior medical student and permission of OME and instructor. Approval by Dr. David Holmes. All members of faculty. Number of students: unlimited.

Students are encouraged to participate in research activities under the supervision of faculty in the Department of Family Medicine. Students may assist faculty in ongoing projects or may seek faculty sponsorship of student-initiated research. Research rotations may extend from one to several modules according to individual student scheduling needs and within the constraints of Medical School policy. Students wishing to obtain credit for research modules must identify a faculty member willing to serve as their sponsor and submit a proposal and letter of support from their sponsor to the course director for his approval. The proposal must include a written description of the project including goals, objectives, methods, faculty supervision, means of evaluation and educational rationale.

DEPARTMENT OF GYNECOLOGY-OBSTETRICS

The Department of Gynecology-Obstetrics is concerned with women's health, particularly as it may be affected by childbearing. The program involves clerkships in the Buffalo General, Erie County Medical Center, Children's, Millard Fillmore, Sisters of Charity, and Mercy Hospitals. The gynecologic services of the Roswell Park Cancer Institute are also included.

***GYN-700 CLERKSHIP IN GYNECOLOGY-OBSTETRICS** 6 credits. Block 1-4. Contact departmental office for site location. Prerequisite-Junior medical student.

Represents a six-week block in the third year. Among the objectives of this clinical clerkship are:

1. Explain sex and gender differences in normal development and pathophysiology as they apply to prevention and management of diseases.
2. Compare differences in biological functions, development, and pharmacologic response in males and females.
3. Discuss the pathophysiology, etiology, differential diagnosis, and treatment options for conditions that are more common, more serious, or have interventions that are different in women.
4. Discuss the pathophysiology, etiology, differential diagnosis, and treatment options for conditions and functions that are specific to women.
5. Effectively communicate with patients, demonstrating awareness of gender and cultural differences.
6. Perform a sex-, gender- and age-appropriate physical examination.
7. Discuss the impact of gender-based societal and cultural roles and context on health care and on women.
8. Identify and assist victims of physical, emotional, and sexual violence and abuse.
9. Assess and counsel women for sex- and gender- appropriate reduction of risk, including lifestyle changes and genetic testing.
10. Discuss the impact of health care delivery systems on populations and individuals receiving health care.
11. Learn about normal and abnormal labor and delivery and complications of pregnancy and other common medical and surgical conditions associated with pregnancy.

In the third year, a six-week clinical clerkship offers each student an opportunity for personal firsthand experience in the care of both normal and abnormal pregnancy. Experience gained by working with patients is reviewed in group conferences and on ward rounds. Concepts not readily observed during the direct patient contact are emphasized in special conferences.

The student is provided with an opportunity to develop clinical skills under adequate supervision in the areas of history taking, pelvic examination, special diagnostic procedures, differential diagnosis, observation and support of patients in labor, aiding and then conducting actual delivery, and assisting at gynecologic operations. Each student has an opportunity to participate in the active care of patients both in inpatient wards and in the outpatient clinics.

Students who develop an interest in clinical or basic investigation are encouraged to pursue their interests. Four-week elective periods during the fourth year may provide either additional clerkship experience or opportunity to pursue investigative interests.

GYN-800 SUBINTERNSHIP IN GYNECOLOGY-OBSTETRICS 4 credit. Modules C-L. **NOTE:** Site: Sister's Hospital Dr. Strittmatter. Number of students: 1 senior/1 junior. Prerequisite-Successful completion of GYN 700

This clerkship is comprised of predominantly inpatient experience, but participation in the Outpatient Clinic and Emergency Room is available. The clerkship will be part of the health care team comprised of the house staff and the attending staff and will assist in providing general obstetrical and gynecological care.

The student will have numerous opportunities to participate and be part of the 250-plus deliveries per month and assist at the gynecologic surgical procedures and will be able to assume patient care responsibility, depending upon their level of training, interest, and commitment to self-education. The clerkship will serve to enhance diagnostic skills and management formation as well as reinforce experiences learned during the third year. Besides participating in a very active clinical service, there is a significant amount of didactic teaching.

The value of this rotation is that it provides an individual with interest in this discipline as a potential career an opportunity to witness firsthand private practice in a large Catholic community hospital.

GYN-804 SUBINTERNSHIP IN GYNECOLOGY-OBSTETRICS 4 credits. Modules D-K. Contact departmental office for site information Prerequisite-Senior medical student. Drs. Greene and Wesolowski, Niagara Falls, N.Y Number of students: 1. Prerequisite Successful completion of GYN 700

The main objective of this rotation is to expose the students to a busy private gynecology-obstetrics practice in a fully accredited hospital where there is ample opportunity for the student to observe and participate in the "general practice" of gynecology and obstetrics.

The students will assist at major gynecologic surgery as second assistants. They will have a selection of cases to choose from. In addition to cases performed by the instructor, the students will follow patients in labor and assist at deliveries. The student should become familiar with the reading and interpretation of fetal heart tracings. The student may be assigned an independent research project and will be invited to attend all staff Gyn-Ob meetings. The student will also observe some office gynecology.

On completion of the rotation, the students should have acquired experience in evaluating the more common gynecological complaints as they present in a private office. They should have gained some confidence in assisting at major gynecological operations, and should be able to recognize the more common complications that occur in pregnancy and in labor.

GYN-810 GYNECOLOGIC ONCOLOGY 4 credits. Modules B-L. Contact departmental office for site location. Drs. S. Lele, Odunsi, and DuPont. Number of students: 1 senior/1 junior. Prerequisite-Successful completion of GYN 700

The intent of this rotation is to help students gain experience in methods of treatment and diagnosis of patients with gynecologic cancer.

The students will participate in all aspects of diagnosis, problem solving, and treatment of patients with gynecologic cancer admitted to University-affiliated Gyn-Ob units. They will be exposed to pelvic anatomy by scrubbing in radical pelvic surgery, and learn the principles of radiotherapy. Experience with the use of chemotherapy in gynecologic cancer will also be gained.

Upon completion of this rotation, the students should know how to screen the general population for early detection of cancer.

GYN-821 SUBINTERNSHIP IN CLINICAL GYNECOLOGY-OBSTETRICS 4 credits. Module B-L. Drs. Kahn and Justicia-Linde. Number of students: 1 senior or 1 junior. Prerequisite-Successful completion of GYN 700

The goals of this rotation are to allow the students to observe and participate in the clinical management of obstetric and gynecologic patients.

During the rotation the students will be given the opportunity to observe and participate in management of outpatient and in-hospital obstetrics and gynecological patients particularly in urban, underserved areas.

Upon completion of the rotation, the students will be able to recognize, manage, and treat common obstetrical and gynecological problems. The students should be able to perform normal vaginal deliveries and do D&C's, cervical biopsies. They should also perform pelvic exams and office management of obstetric and gynecologic conditions.

GYN-823 SUB-INTERNSHIP IN MATERNAL-FETAL MEDICINE 4 credits Modules B-L. A "C" after the module in the Class Schedule indicates Woman & Children's Hospital of Buffalo (Perinatal Center) as the site. Prerequisite-Successful completion of GYN 700. Dr. Amol Lele. Number of students: 1. Students are encouraged to contact the Instructor prior to starting the rotation.

The Sub-internship in Maternal-Fetal Medicine is designed to provide the fourth year student with experience in complicated pregnancy management. Students committed to a career in Obstetrics and Gynecology will have the additional advantage of enhancing their clinical and technical skills in anticipation of beginning their residency training. The student will be a member of the high risk pregnancy team at the Regional Perinatal Center, and will learn the principles involved in the management of medical & surgical complications of pregnancy, as well as the management of structural, genetic and physiologic fetal disease states. The student will be exposed to basic and advanced obstetrical ultrasound, fetal surveillance techniques, Doppler ultrasound, fetal echocardiography, amniocentesis and invasive fetal procedures. The experience will include inpatient, consultative and outpatient complex pregnancy management. Experience in ambulatory care will take place in the High Risk Pregnancy Clinic and Pregnancy Diabetes Clinic housed in the perinatal center. **Attendance at both of these clinics, which take place weekly, is mandatory.** Students are required to take at least two night calls during the rotation to experience emergency and acute perinatal care. Didactic teaching will consist of conferences, rounds, and selected assigned reading. Research opportunities are available for the interested student. At the end of the rotation, students will be able to identify perinatal risk factors and have an appreciation for the medical and technical aspects of complex pregnancy management.

GYN-829 REPRODUCTIVE ENDOCRINOLOGY 4 credits. NOTE: *Module B-L. Prerequisite-Senior medical student. Dr. Crickard. Number of students: 1*

This elective is offered to fourth year medical students who wish to gain experience in all aspects of Reproductive Endocrinology. Students will be exposed to a variety of patients in an outpatient setting as well as both office and hospital based surgery. A significant portion of the clinical material is centered on infertility diagnosis and treatment. Some of the procedures utilized in the office setting will include the following: vaginal ultrasound monitoring of ovulation and early pregnancy, intrauterine insemination, sonohysterosalpingograms, and ovulation induction with fertility medication. A full range of assisted reproductive technologies is performed in the office and IVF/Andrology laboratory. Students will be exposed to In Vitro Fertilization, microinjection of sperm into oocytes (ICSI), transvaginal aspiration of ovarian follicles under conscious sedation, computerized semen analysis, and cryopreservation of embryos, semen and testicular tissue.

In addition to infertility patients, the student will be exposed to patients with a variety of presenting complaints such as: endometriosis, pituitary tumors, hyperprolactinemia, irregular bleeding, polycystic ovarian syndrome, hirsutism, uterine and vaginal congenital anomalies, fibroid uterus, menopausal symptoms, and ovarian cysts.

Hospital based surgery is performed four days a week. The student will be exposed to laser laparoscopy, operative and diagnostic hysteroscopy, myomectomies, exploratory laparotomies for endometriosis and a variety of benign gynecologic problems. In addition, the various operative techniques utilized to reduce adhesion formation will be stressed.

Finally, the student will be exposed to ongoing research projects which currently include: 1) use of genetically engineered LH to determine its role in maturation of ovarian follicles, 2) epidemiological studies with endometriosis patients, 3) role of cytokines in polycystic ovarian patients with insulin resistance.

Evaluation of student performance will include didactic presentations as well as indicators listed in the Consensus Evaluation Form.

GYN-830 PRECEPTORSHIP IN CLINICAL GYNECOLOGY-OBSTETRICS 4 credits. NOTE: *Contact department offices for site location. Modules B-F,I-L. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Todoro, Santos and Aronica. Number of students: 1 senior/1 junior. Prerequisite-Successful completion of GYN 700*

The goals of this rotation are to help students gain practical experience in gynecology-obstetrics in both the office and the hospital.

The students will be exposed to all diagnostic procedures used in private practice: taking histories and doing pelvic examinations, Pap smears, and office-oriented laboratory tests. The students will be exposed to normal prenatal patients.

Upon completion of this rotation, the students should be able to diagnose and at least plan for treatment of all common and some uncommon conditions of patients in the private practice of gynecology and obstetrics.

GYN-840 PRECEPTORSHIP IN GYNECOLOGY AND OBSTETRICS 4 credits. Modules B-L. **NOTE:** Prerequisite-Senior medical student or permission of OME and instructor. Dr. Abu-Sitta, Coordinator Number of students: 1 senior.

The goal of this course is aimed at an expansion of knowledge gained in the third-year clerkship by providing special opportunities to refine, develop, and practice those skills which relate directly to the delivery of care in obstetrics and gynecology.

The course will be conducted in affiliated and participating hospitals, specified clinics in gynecology and obstetrics, and in private office settings. Preceptor arrangements, to be established early in the course, will provide the basis for determining individual activity scheduling for the course. A course topic outline, supplemented with suggested bibliographic references, will be made available to students in order to complement his or her learning. Knowledge of the mechanics and techniques involved in running a private office will also be provided.

Upon completion of the course, each student will be expected to be able to: (1) arrange for or conduct appropriate management of any gynecologic or obstetric condition revealed in his or her examination of the patient; (2) recognize his or her own limitations in the diagnosis and treatment of the patient; (3) know the options available for patient care, and when and how to seek consultation and to make referrals.

GYN-890 COURSE AT OTHER UNIVERSITY 4 credits. Modules B-L. Contact departmental office. Prerequisite-Senior medical student.

By arrangement with other university and chairman of Department of Gynecology-Obstetrics and the School of Medicine.

GYN-950 RESEARCH 4 credits. Prerequisite-Senior medical student and permission of OME and instructor. Dr. Glenna Bett. Contact departmental office.

Students may have an opportunity to work with a faculty member on an ongoing research project or a research project of their own.

INTERDEPARTMENTAL STUDIES

The following courses are offered under the joint auspices of several of the departments of the School of Medicine. These courses provide the basic medical science and the clinical science faculties with an opportunity for a more collaborative approach to medical education. It is anticipated that this "team-teaching approach" in each course will add depth and breadth to the students' curriculum.

IDM-530 CONTINUING EXPERIENCE IN RESEARCH *½ credit. Prerequisite: Currently enrolled in Medical School, with approval of the clinical preceptor and the Office of Medical Education. Faculty: Various. Fall, Spring or Summer. Registration will occur in the Spring semester for work completed during the following summer. Grade: S or U*

This course will enable students to pursue investigation of a suitable research project chosen according to the interest of the student and under the supervision of the faculty. Students will be expected to present a research proposal, participate in appropriate research activities on a full-time basis, and prepare a report of the research activities at the end of the experience.

IDM-540 CONTINUING EXPERIENCE IN CLINICAL MEDICINE *½ credit. Prerequisite: Currently enrolled in Medical School, with approval of the clinical preceptor and the Office of Medical Education. Faculty: Various. Fall, Spring or Summer. Registration will occur in the Spring semester for work completed during the following summer. Grade: S or U*

This course will enable students to pursue a suitable clinical experience chosen according to the interest of the student and under the supervision of the faculty. Students will be expected to participate in appropriate clinical activities on a full-time basis and prepare a report of the clinical experience at the end of the experience.

IDM-630 CONTINUING EXPERIENCE IN RESEARCH *½ credit. Prerequisite: Currently enrolled in Medical School, with approval of the clinical preceptor and the Office of Medical Education. Faculty: Various. Fall, Spring or Summer. Registration will occur in the Spring semester for work completed during the following summer. Grade: S or U*

This course will enable students to pursue investigation of a suitable research project chosen according to the interest of the student and under the supervision of the faculty. Students will be expected to present a research proposal, participate in appropriate research activities on a full-time basis, and prepare a report of the research activities at the end of the experience.

IDM-632 MEDICAL SPANISH *1 credit, Spring semester. Prerequisite-Second year medical student. Karen Gutierrez, RN, FNP. Number of students: 20.*

This course is designed for second year medical students. It will provide students with the opportunity to learn basic Spanish and become comfortable with using medical Spanish prior to entering their clinical training. Students will learn enough Spanish to take a patient history, assess the various systems of the body, and discuss issues related to medications, diet, prenatal/postpartum care and diagnostic examinations. Throughout the course, students will be asked to converse with the instructor during each session and therefore participation will play role in students' assessment. At the end of the session, students will interview "patients" and be evaluated by these individuals.

IDM-640 CONTINUING EXPERIENCE IN CLINICAL MEDICINE *½ credit. Prerequisite: Currently enrolled in Medical School, with approval of the clinical preceptor and the Office of Medical Education. Faculty: Various. Fall, Spring or Summer. Registration will occur in the Spring semester for work completed during the following summer. Grade: S or U*

This course will enable students to pursue a suitable clinical experience chosen according to the interest of the student and under the supervision of the faculty. Students will be expected to participate in appropriate clinical activities on a full-time basis and prepare a report of the clinical experience at the end of the experience.

***IDM-701 DILEMMAS IN CLINICAL MEDICINE** *1 credit. All modules. Prerequisite-Junior medical student. Drs. Jack Freer, Stephen Wear, and staff.*

The Dilemmas in Clinical Medicine (DCM) course is designed as a year-long experience in addressing human and ethical issues in medicine and the decision-making process. By design, it occurs within the six major clinical clerkships of the third-year curriculum, with each clerkship providing at least one 90 minute session dedicated specifically to these issues. The small group sessions are clinically oriented and usually based upon cases from the students' experience. Attendance at all sessions is required. In most clerkships, the student is required to identify and summarize one case in which the student has identified an ethical dilemma. In

Medicine and Surgery, this must be in the form of a written discussion. Grading is based upon the appropriateness of the case identified, as well as the quality of the discussion. Course evaluations will be completed by each student.

A major objective of the course is to help students develop a sensitivity to the wide range of ethical dilemmas that occur in all medical practice. Many, if not most, clinical cases involve some element of value judgment, or normative behavior (what one "should" or "ought to" do in a given situation). Using such a broad definition of "ethical dilemma" will permit the student to identify dilemmas in each of the clinical clerkships.

IDM 730 - CORE TOPICS IN MEDICINE *1-2 credits, fall/spring semester. Prerequisite-third year medical student. Dr. Avery Ellis. Number of students: 140.*

This course will provide students with knowledge, skills, and attitudes that will enhance their ability to provide care to and interact with patients they will encounter during their clinical clerkships and electives.

IDM 801 - MEDICAL MANAGEMENT *4 credits, fall/spring semester. Prerequisite-third/fourth year medical student. Dr. Margaret Paroski and Staff. Number of students: 2.*

The students will work directly with physicians and other professionals in management positions to explore the variety of administrative, regulatory and quality improvement activities in which physicians engage.

The goal of this course is to have students understand: the structure and functions of a Medical and Dental Staff; how current models of care delivery and reimbursement for hospitals and physicians evolved in the U.S.; the principles of process improvement and the evolution of evidence based medicine guidelines; collection and dissemination of hospital and physician performance data; pay for performance initiatives; risk management in health care; oversight of medical practice by regulatory agencies.

By the end of the course, students will be able to: describe the credentialing and privileging process; explain corrective action and the fair hearing process; describe the overall financial and management structure of a hospital and a medical practice; discuss the contributions of Shrewhart, Deming, Wennberg and Codman to the area of performance improvement; describe how a root cause analysis is performed; describe how an evidence based clinical pathway is designed and adherence to the pathway measured; name the major regulatory agencies involved in health care and describe their role; describe common causes for malpractice claims.

Students will attend a variety of medical management meetings, including Medical Executive Committee, Credentials Committee, OR Committee, Chiefs of Service Meeting, Chief Medical Officers meeting, Quality Councils, Departmental QA meetings, and budget meetings. Students will complete assigned readings and meet with the course coordinator or other instructor three times a week to discuss readings. Students will complete four chart audits to identify opportunities to improve quality of care and resource utilization. Students will spend time in "hands on" situations involving credentialing, coding, quality audits, budget design and review, physician contracting, utilization review, medical society activities, compliance activities, monitoring of professionalism, and management of legal issues.

To pass this course, students must: Attend and actively participate in all scheduled sessions, with no unexcused absences; Complete all assigned readings; Demonstrate an understanding of the assigned readings and their application to the various management activities in which the student has participated in discussions with instructors; Complete four chart audits and submit a written analysis of opportunities to improve quality and resource utilization.

IDM 810 - TRANSITION TO RESIDENCY

INTEGRATED MEDICAL CURRICULUM

The Integrated Medical School curriculum for the incoming freshman class replaces the traditional departmentally based, lecture intensive, coursework of the past. This new milieu reduces contact hours and didactic teacher centered education with an emphasis on integration of the basic sciences, increased clinical relevance, and self-directed learning.

The Gross Human Anatomy (ANA 500) course has been maintained, in the first year, in addition to the four-semester long course Clinical Practice of Medicine (520/521, 620/621).

***ANA-500-0 GROSS HUMAN ANATOMY** 6 credits; fall semester. Required course for freshman medical students. Dr. Hard and staff. Number of students: 140.

This course is designed to examine the nature and organization of the major, grossly visible structural components of the dissected human body.

The course emphasizes the normal functions of the above components, particularly as these functions relate to clinical management of patients. The course is composed of lectures and demonstrations, laboratories, and clinical correlations. Lectures and demonstrations are given by the Gross Anatomy staff. These involve a presentation of anatomical details along with general functions and aspects of clinical relevance. In the laboratory, pairs of students, under the guidance of the faculty, dissect and present the anatomical detail and general organization of assigned regions to the other students at their dissecting table. Additional study aids, such as radiographs, CAT-scans, MRIs, special dissections and cross-section also are made available. Clinical correlations are presented throughout the course to augment the material in each region.

By the end of the course, the gross anatomy of the entire human body will have been surveyed. Experience gained by dissection should permit students to relate the more advanced anatomy of their interests to that of the human body as a whole, and to the interests of their colleagues, as in consultation or in presentation of patients.

***IDM-520/521 CLINICAL PRACTICE OF MEDICINE (CPM)** 4 credits; fall/spring semester. Required course of freshman medical students. Dr. Symons. Number of students: 140.

The Clinical Practice of Medicine is a two-year course which is designed to provide you with the fundamental knowledge and skills required in clinical practice. During the first year of this course, you will learn basic skills that are essential for clinical medicine, including medical interviewing, the performance of a physical examination, and the medical write-up. Working in seminar groups and with community-based physicians, students will focus in the fall semester on developing patient-centered communication skills, and the challenges of medical interviewing. In the spring semester, continuing with seminar groups and preceptorships, the focus will be primarily on developing physical examination skills.

At the end of each semester there will be a clinical competency exam where students will demonstrate and confirm skill attainment.

***IDM-620/621 CLINICAL PRACTICE OF MEDICINE (CPM)** 4 credits. Prerequisite: Required course of sophomore medical student. Dr. Milling. Number of students: 140.

The purpose of this course is to provide the students with the basic clinical skills needed for their third-year clinical clerkships. It is a continuation of the first-year CPM course.

The Fall semester course consists of three interrelated components. In a series of lectures, key concepts are presented related to specialized and more advanced aspects of the physical examination, including the gynecologic, urologic, neurologic, vascular, dermatologic, pediatric, ophthalmologic, orthopedic and cardiac examinations. Students, in groups of four, are assigned to clinical preceptors at area hospitals and clinics to allow for individual experience with the medical interview and physical examination. Small group demonstration sessions allow students to polish their skills in specialized aspects of the physical examination.

The Spring semester course consists of five interrelated components. In a series of clinical case presentations, the emphasis is on clinical problem solving, differential diagnosis and interpretation of laboratory and radiologic tests. Hematology is taught in a 13-hour mini-course consisting of lectures and laboratory exercises. Students receive training and experience in the assessment of patients with disabilities, related to trauma, illness, or advanced age. Ethical issues related to clinical practice are discussed in a series of 4 one-hour small or large group sessions. Finally, the students continue to work with preceptors at clinical sites to practice their clinical skills, under supervision.

At the end of the Fall and Spring semesters, students must pass a clinical competency exam, which evaluates their ability to perform a medical interview and physical examination and prepare a written record of their findings. This exam is performed utilizing standardized patients.

At the conclusion of the course, the students should be able to: (1) communicate effectively with patients; (2) obtain a comprehensive medical history; (3) perform a complete physical examination; (4) prepare a written record of the history and physical examination; and (5) present patients orally in a concise manner.

IMC-500 SOCIAL AND PREVENTIVE MEDICINE *Medicine and Society: Population Based Medicine, Clinical Prevention, Interpretation and Application of the Medical Literature to Clinical Practice (Evidence Based Medicine, Epidemiology, Biostatistics) 2 credits; fall semester. Dr. Li*

This foundation course for entering medical students begins the process of the study of medicine in an integrated curriculum. The student is exposed to issues regarding the role of the physician in society, followed by issues in the prevention of disease in a population. The student will acquire the lifelong skills to critically appraise and integrate the best evidence into clinical practice through the application of evidence-based medicine and the use of concepts underlying epidemiology and biostatistics, such as sources of error and bias in data, study design, and the use of basic statistical procedures in the understanding of the medical literature.

At the conclusion of the course, students should understand the rationale for and applications and limitations of basic statistical and epidemiologic methods in clinical investigation, and be able to apply such skills to the practice of evidenced based medicine. This course provides the foundation for critically thinking about how to practice sound medicine. This course prepares the student for subsequent courses by providing the student with the skills to understand and critically evaluate medical studies. The medical student will acquire the skills to apply the results of scientific studies to the practice of clinical medicine.

***IMC-502 Fundamentals I: Molecules, Cells and Molecular Genetics** *8 credits, fall semester. Required course for freshman medical students. Drs. Ettinger, O'Brian, & Cotter. Number of students: 140.*

This foundation module covers fundamental concepts about the structures and functions of proteins, genes, and membranes along with basic principles of signal transduction in response to hormones and factors which control growth and differentiation. This module also covers histologic types of cells and tissues which provides the basis of histology in the integrated system modules.

***IMC-504 FUNDAMENTALS II: UNDERLYING PRINCIPLES** *10 credits, fall semester. Required course for freshman medical students. Dr. Reynard. Number of students: 140.*

This foundation block addresses basic issues of pathology, immunology, microbiology, pharmacology and genetics and their roles in health and disease. In conjunction with the other courses of the first semester, this course completes the underpinnings of basic science to enable students to begin an integrated system based curriculum.

***IMC 510 INTEGRATED STUDY OF THE GASTROINTESTINAL SYSTEM** *7 credits, spring semester. Required course for freshman medical students. Drs. Duffey and Sitrin. Number of students: 140.*

This required system-based block integrates the basic sciences into the study of the gastrointestinal system in both health and disease. Basic science topics are incorporated into an integrated body of knowledge utilizing both didactic and self-directed learning methods, and clinical models.

***IMC-512 INTEGRATED STUDY OF THE URINARY TRACT AND RENAL SYSTEM: URINARY & RENAL SYSTEM** *6 credits, spring semester. Required course for freshman medical students. Drs. Lohr and Krasney. Number of students: 140.*

This required system based block integrates the basic sciences into a study of the urinary tract and renal system in both health and disease. Each of the basic science topics is incorporated into an integrated body of knowledge utilizing both didactic and self-directed learning methods, and clinical models.

***IMC-514 INTEGRATED STUDY OF THE MUSCULOSKELETAL SYSTEM AND INTEGUMENT. MS SYSTEM & INTEGUMENT** 4 credits, spring semester. Required course for freshman medical students. Drs. Heffner and Wild. Number of students: 140.

This required system-based block integrates the basic sciences into a study of the musculoskeletal system and integument in both health and disease. Each of the basic science topics is incorporated into an integrated body of knowledge utilizing both didactic and self-directed learning methods, and clinical models.

***IMC-516 INTEGRATED STUDY OF HEMATOLOGY AND HOST DEFENSE** 5 credits, spring semester. Required course for freshman medical students. Drs. Steinbrenner, Logue, Sands and Reynard. Number of students: 140.

This required course in Hematology and Host Defense integrates the basic science knowledge of the blood and hematopoietic systems with basic concepts of immunology, pathology and microbiology.

***IMC-602 INTEGRATED STUDY OF THE HUMAN CARDIOVASCULAR SYSTEM. HUMAN CV SYSTEM** 8 credits, fall semester. Required course for sophomore medical students. Drs. Hogan, Ellis, et. al. Number of students: 140.

This course provides instruction into the mechanisms of operation of the human cardiovascular system. Emphasis is placed on the integration of relevant principles from anatomy, physiology, biochemistry, pathology, pharmacology and microbiology with respect to the behavior of the normal circulation and its responses to the stress of injury and disease. Both expert-directed and student-directed methodologies will be employed in this module and a select set of clinical cases will be used to guide instruction.

***IMC-604 INTEGRATED STUDY OF THE PULMONARY SYSTEM. PULMONARY SYSTEM** 8 credits, fall semester. Required course for sophomore medical students. Drs. Saltzman and Wild. Number of students: 140.

This required system-based block integrates the basic sciences into a study of the pulmonary system in both health and disease. Each of the basic science topics is incorporated into an integrated body of knowledge utilizing both didactic and self-directed learning methods, and clinical models.

***IMC-606 & IMC 610 INTEGRATED STUDY OF NEUROSCIENCE AND BEHAVIOR I & II** 2/10 credits, fall/spring semester. Required course for sophomore medical students. Drs. Cohan, Pessar, et. al. Number of students: 140.

This required system-based block integrates the basic sciences into a study of neuroscience and behavior in both health and disease. Each of the basic science topics is incorporated into an integrated body of knowledge covering neuroanatomy, neurophysiology, neurological correlations, neuropharmacology, neuropathology, human behavior and psychiatry, utilizing both didactic and self-directed learning methods and clinical models.

***IMC-612 INTEGRATED STUDY OF THE ENDOCRINE & REPRODUCTIVE SYSTEMS & LIFE CYCLE. ENDOCRINE, REPRODUCTIVE SYSTEMS** 10 credits, spring semester. Required course for sophomore medical students. Drs. Gallant, Brownie, Egan. Number of students: 140.

This required system-based block integrates the basic sciences into a study of the endocrine and reproductive systems in both health and disease. Each of the basic science topics is incorporated into an integrated body of knowledge utilizing both didactic and self-directed learning methods, and clinical models.

INTERDISCIPLINARY GRADUATE PROGRAM IN BIOMEDICAL SCIENCE

BMS-501 CELL BIOLOGY 1 4 credits; fall semester. Prerequisites--Calculus, familiarity with principles of physical chemistry, and consent of instructor. Dr. Duffey.

The objective of this lecture/conference course is to acquaint students with basic concepts of cell structure and function. Topics to be covered include cell organelle and membrane structure, permeation through ion channels, carriers and pumps, protein sorting and trafficking and signal transduction (receptors, G-proteins, second messengers).

The course utilizes lectures, problem solving, study of original journal articles, written examinations, and research papers.

At the end of the course, students should be able to deal quantitatively with experimental data and/or the scientific literature pertaining to these aspects of cell function.

BMS-503 PRINCIPLES OF BIOCHEMISTRY 4 credits; fall semester. Prerequisites--Permission of course coordinator: Dr. Daniel Kosman.

The course is designed to provide doctoral students with a comprehensive overview of biochemistry. Topics to be covered include chemical principles, protein structure and stability, enzyme kinetics, mechanism and control of enzyme, metabolic pathways, integration of metabolism, nucleic acid structure and properties, DNA replication, transcription, RNA processing and translation. The course utilizes lectures, problem solving, original journal articles, and written examinations.

BMS-505 DYNAMIC CELL INTERACTIONS 2 credits; first half of spring semester. Prerequisites—calculus, familiarity with principles of physical chemistry, and consent of instructor. Dr. R. Rabin.

The objective of this course is to acquaint students with contemporary issues of communication between cells. The course utilizes lectures, conferences, problem solving, original journal article, and written examinations. Topics to be covered include properties and function of the cellular cytoskeleton, dynamics of cellular motility, structure and function of gap junctions, cell adhesion, leukocyte trafficking.

BMS-506 CELL GROWTH, DIFFERENTIATION AND TRANSFORMATION 2 credits; second half of spring semester. Prerequisites—calculus, familiarity with principles of physical chemistry, and consent of instructor. Dr. R. Rabin.

The objective of this course is to acquaint students with contemporary issues involved in the growth, differentiation and transformation of cells. The course utilizes lectures, conferences, problem solving, original journal article, and written examinations. Topics to be covered include stem cells apoptosis and cell death, cellular differentiation, angiogenesis, neuronal growth and differentiation.

BMS 511 Interdisciplinary Seminar 2 credits; fall semester. Prerequisite – Permission of course coordinator: Dr. Richard Rabin.

Seminars are designed to introduce students to on-going research and various scientific techniques which will enable them to complete their designated laboratory rotations. Topics include intro/quantitative biology, solutions/acid-base, absorbance/fluorescence, microscopy, chromatography, monoclonal antibodies/applications, electrophoresis, recombinant techniques, PCR and mutagenesis, microarrays, protein-nucleic acid interactions, protein-protein interactions, transgenics, computers in molecular biology and health sciences library search sessions.

BMS 512 Interdisciplinary Seminar 1 credit; spring semester. Prerequisite – Permission of course coordinator: Dr. Richard Rabin.

Under the direction of faculty facilitators, students will present current research papers followed by a class discussion.

BMS-650 INDEPENDENT STUDY IN BIOMEDICAL SCIENCES 1-12 credits, spring and fall semester. Prerequisite: First or second year medical student. Permission of Instructor: Dr. Nancy Nielsen.

This course introduces students to disciplines, faculty, techniques and research strategies. Early exposure to the interdisciplinary nature of the life sciences is desirable for medical students. Students participate in on-going projects with a faculty mentor in the basic science departments.

BMS-950 INDEPENDENT STUDY IN BIOMEDICAL SCIENCES 1-12 credits, spring and fall semester, Prerequisite: Third or fourth year medical student. Permission of Instructor: Dr. Nancy Nielsen.

This course introduces students to disciplines, faculty, techniques and research strategies. Exposure to the interdisciplinary nature of the life sciences is desirable for medical students. Students participate in on-going projects with a faculty mentor in the basic science departments.

Medical Scientist Training Program

The first two years of training mirrors the syllabus of the medical student. Students are also required to attend a research seminar program to augment their education and reinforce their basic scientific knowledge. During the summer, between the first and second year, students are required to obtain research experience in two to three laboratories in order to acquaint themselves with different programs and departments related to their research interests. This is an important and indispensable exercise for MSTP students; however, our goal is for the student to make a commitment to a Department or a thesis advisor at the beginning of the second year.

After the completion of the second year, students will focus on the Ph.D. department of their choice. Students must qualify in the Ph.D. Department of their choice and undergo an admission procedure as that of any other student applying to that program.

The last year and a half of the MSTP are designed to provide students with the required medical rotations to broaden and strengthen their basic knowledge and skills in clinical medicine. During this period of time, students are also required to attend the MSTP Seminars. The required advanced clinical courses include Advanced Medicine, Surgical Specialties and Neurology. Once all the requirements have been met, students can adjust the remaining time in the program to conform to their individual needs. All elective courses must be approved by the OME.

MSTP students are expected to remain in good standing both as graduate students and medical students. Performance in the first two years will be evaluated based on Graduate School standards. Students are required a grade of High Satisfactory or better in all Medical School courses.

MST 601/602 RESEARCH SEMINAR *1 credit; fall and spring semester Grade: S or U Required course for all MSTP students.*
Dr. Paul Knight

This course is designed to expose MSTP students to the current advances in basic and clinical research in a variety of biological and medical disciplines. Seminars will be presented biweekly by distinguished faculty of the university. Students in year 1 and 2 of the medical component and all MSTP students in a Ph.D. program are required to enroll.

DEPARTMENT OF MEDICINE

The Department of Medicine brings together faculty members with diverse backgrounds and experiences who share a concern for the teaching and practice of clinical medicine. The fundamental goal of Internal medicine courses is to provide students with a comprehensive core of the clinical medicine knowledge necessary to become a competent physician. The faculty strive to motivate students and provide them with experience adequate to define and redefine their interests, whether these direct the student to practice clinical medicine or to pursue other disciplines.

The department presently includes 160 full-time and 360 part-time faculty members and 160 house staff, all of whom are utilized as instructors to give the student a broad range of learning opportunities. The department incorporates the medical services of the three major affiliated institutions: the Buffalo General Hospital, Erie County Medical Center, and Veterans Affairs Medical Center, and employs the resources of Roswell Park Cancer Institute, Sisters of Charity Hospital, Mercy Hospital of Buffalo, and Millard Fillmore Hospital.

New programs, utilizing other institutions, have been developed to further increase the range of education offered to students by the department. For example, Consultation Medicine, which emphasizes the areas of adolescent and maternal medicine, is offered through the Buffalo Children's Hospital. Several programs are also in place which focus on the teaching of patient care in various ambulatory clinics and rural practices.

MED-521 MEDICAL HUMANITIES: CULTURAL AND SOCIAL DIMENSIONS OF THE PHYSICIAN-PATIENT

RELATIONSHIP 2 credits; spring semester. Dr. J. Bono. Number of students: 15. Prerequisite-Medical student.

This course is a blend of literature, philosophy, anthropology, and the history of medicine. The purpose is to address themes and issues in the thinking and behavior of physicians and patients not usually addressed in other medical school courses.

The principal experience of the course is reading great literature and critically viewing great films, often in association with papers from medical sources. Classes meet to discuss readings, films, and the issues they raise regarding the social, cultural and humanistic dimensions of medicine. Readings vary in obvious relevance to medicine. Some, like stories by William Carlos Williams or Tolstoy, are explicitly medical in content. Others, like Flannery O'Connor's, "The Lame Shall Enter First", represent non-medical settings but have themes related to the passions, powers, and responsibilities of physicians. Examples of non-fictional readings from medical sources are Eric Cassell's "The Nature of Suffering and the Goals of Medicine" and David Hilfiker's "Healing the Wounds: A Physician Looks at His Work". The course will be divided into two units: (1) "Problems of Knowledge and Power: The Physician-Patient Relationship and the Social and Cultural Contexts of Healing" and (2) "Constructing Narratives of Illness: patients' Stories and the Meanings of Illness, Aging, Death, and Dying". One or more films will be used to illustrate themes in the course.

At the conclusion of the course, students should have a greater understanding of the personal dilemmas faced by physicians and patients, and of the attributes and values necessary to each. Students should also have the ability to observe, recognize, and respond in appropriate ways to the meanings and life-problems associated with illness for individual patients. A goal of this course is to facilitate thoughtful and lively discussion concerning the non-medical aspects of medicine essential to the ideal physician's practice.

***MED-700 INTERNAL MEDICINE CLERKSHIP** 8 credits. Prerequisite-Junior medical student. Dr. Susan Gallagher, Program Director; Drs. Saltzman, Schwartz, Mishra, Lippes, Freer, Sellick, Gabriel, Jacobus, and staff.

Clinical clerkship in Medicine is intended to enable the student to understand the clinical correlation of basic science knowledge and to acquire further medical information and clinical skills necessary for understanding and management of commonly encountered medical problems and diseases of adult patients. Six hospitals and numerous ambulatory sites participate in the clerkship program. The course is composed of both inpatient and outpatient experiences.

For the inpatient rotations, the students are arranged into groups of two or three who work as members of a medical ward team that also includes an attending physician and two or three house officers. In addition to their daily work, they take night and weekend duties. Each student is expected to perform initial evaluation and close follow-up of a limited number of patients. During the early part of the clerkship, the emphasis is placed on patient interview, physical examination, problem identification, write-ups, and case presentations. More direct involvement with patient management and decision making, as well as familiarization with common bedside and lab procedures, is progressively added to their clinical clerkship activities. With diverse roles, the attending physician and house staff actively participate in student teaching.

The ambulatory portion of the clerkship is done under the supervision of a preceptor. Students will be expected to perform directed histories and physicals and to write up and discuss the cases seen with the preceptor.

At the outset of the course, each student is provided with a course syllabus describing the objectives, expectations, student's responsibilities, and outline of the core curriculum with pagination of a most updated medical textbook and other references. Although the students will have ample learning opportunities through their participation in patient workup, daily rounds, case presentations and discussions, teaching conferences, lectures and seminars, their self-learning through reading and effective use of the medical libraries and learning resource centers will be stressed throughout the clerkship. The eventual goal is to develop the skills that will allow each student to continue independent learning and problem solving.

***MED-802 ADVANCED CLERKSHIP IN MEDICINE** 4 credits. Modules B-L. Contact departmental office for site location before registering. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Susan Gallagher, Program Director, Drs., Ellis, Schwartz, Mishra, and staff. Number of students: 17.

Advanced Clerkship in Medicine is a four-week rotation that will give students an inpatient experience aimed at developing expertise in managing acute illness in the hospital setting. It will stress normal and abnormal physiology, management of fluid and electrolytes, and highlight some of those conditions that are commonly treated by practicing internists. The rotation will be structured around a work team consisting of resident and intern, a fourth-year clerk, and a third-year clerk. There will be daily participation in morning report and in scheduled didactic conferences. In addition, there will be a didactic portion specifically geared to the fourth year clerk.

By the end of the rotation the student should feel comfortable with responding quickly to acute medical problems and should be able to develop a reasonable pertinent differential diagnosis for presenting problem and begin to discuss appropriate management. The student will thus be prepared to handle not only acute medical problems, but complications that may result from surgery or that may be seen in patients that are commonly seen within other specialties.

***NO out of town interviews can be scheduled during this clerkship. Due to limited number of sites available each module, no student will be permitted to withdraw from this course except under the most unusual circumstances and with the specific permission of Dr. Gallagher.

MED-803 PRIMARY CARE INTERNAL MEDICINE 4 credits. Modules C-L. **NOTE:** A "G" after the module in the Class Schedule indicates the Buffalo General Hospital as the site. Prerequisites-Senior medical student or permission of OME and instructor. Successful completion of MED 802 Advanced Medicine Clerkship; and approval by either Drs. Susan Gallagher or Richard Schifeling. Number of students: 1.

The student will be provided experience in ambulatory medicine which approximates that of a practicing academic general internist. The activities of the rotation will include making daily and weekend rounds on the service inpatients; evaluating scheduled and unscheduled ("walk-in") patients in the primary care clinic; researching medical issues arising from the care of these patients; coordinating patient care with nursing staff, patients, and their families; and teaching third-year medical students in the outpatient setting.

Upon completion of this rotation, the student should have gained insight and experience in the routine of an academic general internist, improved physical diagnosis and patient management skills, provided continuity of care for patients going from the outpatient to inpatient service as well as outpatient follow up after hospital discharge.

MED-804 CARDIOVASCULAR MEDICINE 4 credits. Modules A-M. **NOTE:** A "G" after the module in the Class Schedule indicates the Buffalo General Hospital as the site. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Boden, Cauty, Cimato, Graham, Iyer, Page, Paris, Thomas and Tandar. Number of students: 2.

Students will see patients for whom cardiac consultation has been requested and will make daily rounds with the attending, Cardiology fellow, and resident. The student will also attend our general Cardiology Clinic. There will be exposure to EKG reading, stress testing, nuclear cardiology, Holter monitoring, echocardiography, and cardiac catheterization. There also will be opportunities to participate in CCU rounds and observe cardiac catheterizations, interventional cardiology procedures and open-heart surgery. The student will attend weekly University-wide Fellows conference and cardiac catheterization conference. On completion, the student will develop an understanding of the pathophysiology, diagnosis, and treatment of a wide variety of cardiac conditions.

NOT CURRENTLY OFFERED- (at ECMC)

MED-804 -E CARDIOVASCULAR MEDICINE 4 credits. Modules B-L. **NOTE:** An "E" after the module in the Class Schedule indicates the Erie County Medical Center as the site. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Dashkoff, Wadhvani, and Zizzi and staff. Number of students: 1.

The major objective of this rotation is to familiarize the students with consultative cardiology through a broad exposure of diagnostic and therapeutic modalities. Students will participate in daily consult rounds with the Cardiology attending, resident, and staff. They will receive teaching in the interpretation of electrocardiograms and observe noninvasive cardiology procedures including echocardiography, nuclear imaging and treadmill exercise testing. Opportunities will be available to follow patients through special procedures including cardiac catheterization, percutaneous interventions and open-heart surgery. Students will attend the weekly cardiology clinic, weekly University-wide Fellows conference and occasionally visit the Coronary Care Unit. This rotation is designed to improve the students' physical diagnostic skills and to enhance their knowledge of cardiac pathophysiology.

MED-804 CARDIOVASCULAR MEDICINE 4 credits. Modules B-L. **NOTE:** A "V" after the module in the Class Schedule indicates the Veterans Administration Medical Center as the site. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Baldwa, Canty, Ellis, Fallavollita, Manja, Young and staff. Number of students: 2.

The purpose of this elective is to provide fourth-year medical students with a comprehensive introduction to clinical cardiology. Students will become adept in cardiac history taking and physical examination. They will understand contemporary management of patients with acute and chronic cardiovascular disease, and be exposed to various noninvasive and invasive diagnostic modalities. Patients will be seen and evaluated in daily consultation rounds with the Fellow and attending. There will be opportunity to follow patients in the coronary care unit as well as those undergoing coronary interventions and cardiac surgery. Students will also participate in reading electrocardiograms, and be introduced to echocardiography, stress testing, and nuclear cardiology. In addition to scheduled weekly University-wide fellows conferences and cardiac catheterization conference, informal didactic sessions will be arranged so that topics relevant to patient management can be discussed. The intent is for students to become familiar with a variety of cardiac diseases including ischemic heart disease, valvular heart disease, pericardial disease, brady- and tachyarrhythmias, and primary and secondary cardiomyopathies.

MED-807 UNIVERSITY PROGRAM IN PULMONARY DISEASES 4 credits. Modules A-M. Contact departmental office for site location before registering. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Alan R. Saltzman, Course Director. Drs. Sethi, Lwebuga-Mukasa, Ten Brock, Mador, Gibbons and Kufel. Number of students: 3.

The objective of this rotation is to teach the clinical and laboratory techniques necessary for diagnosis and management of patients with pulmonary diseases.

Students will actively participate in evaluation of patients seen by the pulmonary disease services at the VAMC, and the BGH/RPCI Campus. This will include pulmonary consultation and critical care evaluation and management. In addition, daily learning sessions are conducted, covering such fields as pulmonary function interpretation, X-ray diagnosis, and selected clinical topics. Exposure to sleep apnea (VA) and bronchoscopy is also available.

At the end of this rotation, the students should be able to outline a diagnostic and therapeutic program for a patient with pulmonary disease. They should have thorough understanding of pulmonary function studies and be experienced in the interpretation of chest X-rays.

MED-808 RENAL DISEASES 4 credits. Modules A-M. **NOTE:** A "E" after the module in the Class Schedule indicates the Erie County Medical Center as the site. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Cunningham, Venuto, Murray, Hom, Tienzo, and Ranjan. Number of students: 2.

This rotation is designed to afford students the opportunity to acquire necessary skills for the evaluation of patients with renal disease, fluid and electrolyte abnormalities, and hypertension.

The students will be expected to evaluate and follow one to three new inpatients per week. The patient mix will be comprised of those with acute and chronic renal failure, others who are postrenal transplant, and patients referred by other services for a variety of hypertensive of fluid or electrolyte abnormalities. Rounds will be made regularly with an attending physician, the Renal fellow, and house officers assigned to the renal service. The students will attend the Renal Hypertension Clinic, which meets weekly. This will afford the students the opportunity to examine and follow outpatients with renal disease and/or hypertension. The Renal Transplant Clinic meets weekly, and students can have the opportunity to evaluate stable patients who have successfully undergone renal transplant.

Conferences: The students are encouraged to attend morning, report and mortality/morbidity conference at C, the ECMC. Monthly renal biopsy conferences are held on Tuesday afternoons at the ECMC. This meeting is attended by members of the Departments of Pathology and Pediatrics, as well as the members of the University wide nephrology community. The clinical aspects of each biopsy are presented and discussed. A series of lectures are held weekly which review many basic areas of nephrology.

Seminars: Each hospital arranges a schedule under the direction of the Renal fellow and attending physician of a group of topics to be presented and discussed. This affords the student an opportunity to prepare an in-depth review of at least one topic on nephrology during the course of the elective.

At the conclusion of this rotation, students should know the basic approach to evaluation and treatment of the patient with renal disease or hypertension and fundamentals of renal pathophysiology.

MED-808 RENAL DISEASES 4 credits. Modules C-G. **NOTE:** A "F" after the module in the Class Schedule indicates the Millard Fillmore Suburban as the site. Prerequisite-Senior medical student or permission of OME and instructor. Dr. George Marinides. Number of students: 1.

The goal of this program is to familiarize the student with the current diagnosis and management of renal diseases including acute/chronic renal failure, fluid and electrolyte abnormalities, and acute/chronic hypertensive problems.

The student will become a part of a team consisting of attending and resident. This experience includes daily rounds on an active renal service with direct involvement in nephrology consults.

The student is expected to participate actively in the twice-weekly nephrology service conferences and twice monthly medical house staff conferences, renal radiology, and renal pathology. In addition, the student will be assigned selected readings from the nephrology library.

Opportunity is also available to participate in the various dialysis programs revolving around the eight-station hemodialysis facility serving both acute and chronic end-stage renal disease patients. This facility is complemented by self-care training programs in hemodialysis and continuous ambulatory peritoneal dialysis. Exposure to clinical research is available as a result of nephrology division's close association with the Departments of Pharmacokinetics and Neurology.

At the conclusion of this rotation, a student should know the basic approach for evaluation and treatment of the patient with renal disease or hypertension and the fundamentals of renal pathophysiology.

MED-808 RENAL DISEASES 4 credits. Modules A-M. **NOTE:** A "V" after the module in the Class Schedule indicates the Veterans Administration Medical Center as the site. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Lohr, Arora, and Ranjan. Number of students: 1.

This rotation is designed to afford the students the opportunity to acquire necessary skills for the evaluation of patients with renal disease, fluid and electrolyte abnormalities, and hypertension. The students will be expected to evaluate and follow one to three new consultations per week. The patient mix will be comprised of those with acute and chronic renal failure, hypertension, and fluid or electrolyte abnormalities. Rounds will be made regularly with an attending physician, the renal fellow, and house officers assigned to the renal service. The students will attend the renal hypertension clinic, which meets weekly. This will afford the students the opportunity to examine and follow outpatients with renal disease and/or hypertension.

Conferences: The students are encouraged to attend morning report at the VA Medical Center. Monthly renal biopsy conferences, journal clubs, transplant conference, and research conference are held on Tuesday afternoons. A series of lectures and case presentations are held weekly which review many basic areas of nephrology. The students are urged to attend these conferences, which are held on Friday mornings at the VA Medical Center or ECMC.

Combined Conferences: The students are encouraged to attend quarterly grand rounds held at the University at Buffalo.

Seminars: Each hospital arranges a schedule under the direction of the renal fellow and attending physician of a group of topics to be presented and discussed. This gives the student the opportunity to prepare an in-depth review of at least one topic on nephrology during the course of the elective.

At the conclusion of this rotation, students should know the basic approach to evaluation and treatment of the patient with renal disease or hypertension and fundamentals of renal pathology.

MED-809 ALLERGY-CLINICAL IMMUNOLOGY 4 credits. Modules B-L. Contact departmental office for site location before registering. Prerequisites-Senior medical student or permission of OME and instructor. Drs. Ballow, Ambrus, Jr., Schwartz, and Mark Sands. Number of students: 1.

During this rotation students will learn about the diagnosis and management of allergic and immunologic diseases. Particular attention will be directed toward the common respiratory allergies, asthma, food and drug reactions, atopic dermatitis, urticaria, angioedema, hymenoptera sensitivity, autoimmune disorders, and primary and secondary immunodeficiency diseases. The student will attend two pediatric and three adult clinics each week and will also attend weekly teaching sessions, journal club, and research seminars.

Upon completion of this rotation, students will have learned to take a history for allergic and immunologic diseases and to perform appropriate physical examination, skin tests, and simple spirometry. They also will learn to formulate a therapeutic program of environmental control, pharmacotherapy including the use of intravenous gamma globulin, and immunotherapy. Additionally, students will become familiar with the cellular and molecular mechanisms underlying the pathogenesis and treatment of allergic and immunologic diseases.

MED-810 SLEEP MEDICINE 4 credits. Modules C-L. Contact departmental office for site location before registering. Prerequisites-Senior medical student. Dr. Ten Brock. Number of students: 1.

The fourth year clinical elective in Sleep Medicine will allow the student to become familiar with the various sleep problems people encounter. Such problems include sleep apnea, insomnia, periodic limb movements, parasomnias, and circadian rhythm disturbances. Over the course of four weeks, the student will be exposed to various diagnostic and therapeutic techniques used in the field of Sleep Medicine. The student will attend a few sleep medicine clinics a week. Additionally, instruction and exposure will be given regarding interpreting polysomnographic recordings as well as polysomnogram hookups. The student will attend and partake in multidisciplinary sleep medicine conferences as well as sleep medicine journal club. The medical student is given a sleep rotation schedule and will become familiar with sleep centers in Buffalo and the surrounding area as well as the sleep medicine attendings.

MED-811 UNIVERSITY PROGRAM IN ENDOCRINOLOGY 4 credits. Modules A-M. Contact departmental office for site location before registering. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Ryan, Dandona, Chaudhuri, Dhindsa, Kelijman, Lippes, O'Donnell, and Stephen Spaulding. Number of students: 2.

This rotation will give the student a broad-based exposure to endocrine diseases, focusing on diagnosis, pathophysiology, and management. The students will participate in clinics and inpatient consult services. Approximately 60% of the time will be spent in the ambulatory diabetes and general endocrinology clinics where new and established patients are evaluated. Hospital based consults are drawn from a variety of disciplines including Internal Medicine, Surgery, Psychiatry, and Ob-Gyn. Spending part of the rotation in a practitioner's office can be arranged.

The rational use of diagnostic methods and therapy will be stressed during the rotation in clinics, attending rounds, and at the weekly clinical conference. At the end of the experience, the student should have a general understanding of pathophysiology and diagnostic methods in endocrinology.

NOT CURRENTLY OFFERED

MED-812 RHEUMATOLOGY 4 credits. Modules A-M. Contact Dr. Ambrus Jr. (859-1262) for availability and registration. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Ambrus Jr. Number of students: 1.

This course is a combined program at the Veterans Administration Medical Center and the Erie County Medical Center. Preferences, if any, for principal hospital base will be accommodated. The goal of this rotation is to expose the student to the fundamentals of arthritis and rheumatic diseases.

This course will include the supervised examination of outpatients and inpatients with a wide variety of rheumatic diseases, the participation in the management of such cases, presentation and discussion of cases, and special rounds and seminars. In addition, the student will explore the scope of the field of rheumatology and its interface with immunology, dermatology, physical medicine, orthopedics, and nephrology.

At the conclusion of the rotation, students should have acquired skills in the art of locomotion system examination, the procedure of joint aspiration, techniques of polarizing microscopy of crystals, and therapy and prognosis of acute and chronic rheumatic diseases.

MED-813 INFECTIOUS DISEASES 4 credits. Modules A-M. Contact departmental office for site location before registering. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Almyroudis, Berenson, Crane, Hsiao, Lesse, Russo, Segal, Sellick, Sulaiman, and Wadhwa. Number of students: 6.

This rotation provides a student with an intensive experience in clinical infectious diseases. Students will have the opportunity to evaluate patients initially and present them at daily consult rounds with the attending physician. The experience will include history taking, physical examination, review and interpretation of pertinent laboratory data, case presentation, and reading of pertinent information from the available literature. A syllabus of important original articles and reviews in infectious diseases is provided. Students will be assigned to BGH, ECMC, RPCI (MS4 only), or the VAMC.

NOT CURRENTLY OFFERED

MED-815 PRECEPTORSHIP IN INTEGRATIVE MEDICINE 4 credits Modules C-L. Dr. Sanford Levy. Number of students: 0

This office rotation with an internist who practices Integrative Medicine will expose the student to a medical practice which is conventional in many ways, but also focuses on nutrition, vitamins, herbs, and other dietary supplements for prevention of health ailments as well as treatment of medical conditions. Patients of this practice are sometimes referred to local homeopaths, massage therapists, acupuncturists, chiropractors, or a variety of other types of complementary practitioners.

There will be three aspects to this rotation. First, the student will see 5-10 patients each day in the office, often seeing new patients to the practice and urgent resists prior to the Attending, and often seeing routine revisits with the Attending. Second, if desired, it will be arranged for the student to spend several hours in the office of practitioners such as chiropractors, acupuncturists, or others. Third, the

student will choose a relevant small project such as gathering and compiling published data on select dietary supplements for presentation to a hospital pharmacy and therapeutics committee, or gathering specific data on cardiac rehabilitation programs which successfully incorporate stress reduction techniques for presentation to the medical director of a local cardiac rehabilitation program. The Attending will work closely with the student on any project chosen.

MED-817 INPATIENT/AMBULATORY CARE OF LEUKEMIA AND LEUKEMIA-RELATED MALIGNANCIES 4 credits.

Modules B-M. NOTE: An "R" after the module in the Class Schedule indicates the Roswell Park Cancer Institute and an "E" indicates ECMC as the site. Number of Students: 6

ECMC Site – HEMATOLOGY/ ONCOLOGY - INPATIENT/ AMBULATORY

Number of Students: up to 2 fourth and 2 third year. Instructors Dr. Gerald Logue and Dr. Zale Bernstein, Chief of Hematology & Oncology: A broad introduction to clinical hematology and oncology. A wide variety of hematologic and oncologic clinical presentations, both in inpatient and outpatient, are encountered. Teaching and first hand clinical encounters are encouraged.

RPCI Site- INPATIENT/AMBULATORY CARE OF LEUKEMIA AND LEUKEMIA-RELATED MALIGNANCIES

Number of students: 2. Prerequisite-Senior medical student or permission of OME and instructor, Drs. Wetzler, Wang, and staff of Medical Oncology, RPCI. This is a four-week (one module) rotation for fourth-year medical students on the Leukemia service at Roswell Park Cancer Institute. Students will care for up to two patients receiving treatment on the inpatient service, will participate in daily inpatient rounds with the Leukemia team, and will participate in the evaluation and care of outpatients with leukemias and related disorders in the outpatient setting under the supervision of the attending physicians. In the inpatient setting, the student will become familiar with the evaluation and care of acute leukemia patients, management of neutropenic patients, transfusion therapy, evaluation of medical complications of leukemia patients and organization of high-acuity inpatient care. In the outpatient setting, the student will become familiar with evaluation of abnormal blood counts and management of chronic hematologic disorders including chronic myelogenous leukemia and myelodysplastic syndromes. In both settings, students will gain familiarity with diagnostic evaluation of the bone marrow, including bone marrow aspiration and biopsy, hematopathology, immunophenotyping, cytogenetics and molecular diagnostics.

MED-821 GASTROENTEROLOGY-LIVER 4 credits. *Modules A-M. Contact departmental office for site location before registering. Prerequisite – Junior or Senior medical student. Drs. Sitrin, Novak, Mahl, Mehboob, Pomakov, Samuel, Burkard, Rani. Number of students: 2 per site; 4 total.*

This course is designed to provide an in-depth experience in gastroenterology and hepatology oriented toward gaining an understanding of the pathophysiology, molecular pathogenesis, and clinical management of diseases and an exposure to the current research in the field.

The student will become part of a team of physicians responsible for the consultation and clinic services. The student will be expected to evaluate new patients, present to an attending physician, and to provide a review of the patient literature. He will have the opportunity to observe diagnostic procedures such as endoscopy, colonoscopy, sigmoidoscopy, ERCP, endoscopic ultrasound, esophageal motility, liver and small bowel biopsies. The student may also participate in GI grand rounds, journal club, research seminars, endoscopy, GI pathology, radiology and GI pathophysiology conferences. Students may do this course at either the VAMC or ECMC. Hospital choice is on a first-come-first-served basis. All conferences are held jointly at the VAMC.

The student, upon completion of this course, should have gained an appreciation of the pathophysiology and clinical characteristics of the diseases of the GI tract and the liver most commonly encountered in the geographic area. In addition, it is hoped the student will have a better idea of the value and limitations of the diagnostic procedures and therapeutic regimens used in this medical subspecialty.

MED-851 PULMONARY DISEASES-MICU ROTATION 4 credits. *Most modules. Prerequisite-Received an Honors grade in MED-700, successful completion of MED 802, and approval of Dr. Susan Gallagher. Drs. Campbell, Goodnough, El-Sohl, Porhomayon, and Provost. Number of students: 1*

The MICU rotation will provide students with direct experience in caring for critically ill patients in the Medical intensive Care Unit. The student will be an active participant in the MICU and have primary patient care responsibility with supervision given by the MICU resident and attending staff regarding daily care of patients in the MICU. A limited caseload will be assigned and daily work rounds and attending rounds with the house staff and MICU attending physicians will be expected. Presentations of recently admitted and existing patients will be performed on a daily basis. Exposure to critical care procedures such as CVP'S, arterial lines, and Swan Ganz catheterizations will be available. A limited MICU lecture series and MICU manual will be provided.

Upon completion of the rotation, the student should have a basic understanding of the needs of critically ill patients. A rudimentary knowledge of mechanical ventilation and the types of pharmacologic intervention required in an ICU setting is also expected.

MED-860 GERIATRIC MEDICINE 4 credits. Modules C-L. Contact departmental office for site location. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Naughton, Ippolito, Garbarino, Ramadan, Thurairajah, and Fray. Number of students: 1.

The course is designed to provide a clinical experience in internal medicine focused specifically on the older patient and an understanding of certain aspects of medical practice which are essential in the care of older patients. Examples include clinical pharmacology of the elderly, functional assessment, modalities of rehabilitation designed to preserve functional capacity, and nutrition. Special attention is given to formulating a plan for evaluation and management of patients with multiple problems and guidelines in the development of a plan of action for the patient who is "getting nowhere." The rotation includes experience in conducting a home visit and a visit to a nursing home.

Course Activities/Experience: Teaching conferences and "core topic presentations" on topics of special relevance to geriatrics and long-term care are held weekly and provide the student and Geriatric fellows with an opportunity to extend their knowledge into various aspects of geriatrics. Presentations are given by Geriatric faculty and fellows and, occasionally, student/subintern. Faculty from other medical specialties concerned with the care of geriatric patients are invited to present conferences on special topics. Students will attend a geriatric journal club weekly. Students will also join Dr. Garbarino in the geriatric ambulatory clinic at Millard Fillmore Gates Hospital. Nursing home experience is provided at a variety of hospital and community based sites, with a multidisciplinary approach to demented patients and their families with Dr. Chang and Dr. Fray. Students will also work with Dr. Freer in Palliative Care at Millard Fillmore Gates Hospital. The course objectives include an understanding of the unique physiologic, pharmacologic, psychologic, and sociologic problems faced by older persons and the gaining of a perspective which will assist the student in providing good care for those patients, and enjoying it.

NOT CURRENTLY OFFERED

MED-861 CLINICAL PHARMACOLOGY 4 credits. Modules Limited. **NOTE:** A "F" after the module in the Class Schedule indicates the Millard Fillmore Hospital as the site. Prerequisite-Senior medical student or permission of OME and instructor. J.L. Izzo, Jr., M.D.; J. Schentag, Pharm.D.; R. Blum, Pharm. D.; D. Nix, Pharm.D.; J.R. Carr, Pharm. D.; and M. Birmingham, Pharm. D. Number of students: 0.

The goal of this rotation is to provide students with instruction and experience in the rational use of drugs in clinical medicine. This includes application of pharmacokinetics to the selection and dosing of drugs. Emphasis will be placed on cardiovascular drugs, antibiotics, and problems of polypharmacy.

Students will participate in an active clinical pharmacology consultation service dedicated to the optimization of drug therapy in acutely ill patients. Students will be involved in review of drug utilization, computer simulations, patient assessment, and routine provision of consultative advice under appropriate guidance. They will work with fellows, residents, and faculty who are part of a federally funded training program in clinical pharmacology.

MED-862 INPATIENT/AMBULATORY CARE IN ONCOLOGY 4 credits. Modules A-M. **NOTE:** An "R" after the module in the Class Schedule indicates the Roswell Park Cancer Institute as the site. Prerequisite-Senior medical student or permission of OME and instructor, Dr. Levine, and staff of Medical Oncology, RPCI. Number of students: 2.

This program is an intensive experience directed at learning the natural history, definitive management, and supportive care of outpatients with malignant disease at an internationally renowned cancer institute. The prognostic influence of morphology, immunological and molecular genetic markers, cytogenetics, and patient characteristics will be shared. The student will work with the Medical Oncology fellows and faculty on specific case management of hematologic and solid tumors in the various outpatient clinics and inpatient units of the RPCI. Students will spend two weeks on a solid tumor service and two weeks on a hematology service. The student will complete initial histories and physicals on patients new to the Institute and follow up his or her patients during the four-week rotation. Students will also have the opportunity to see patients who are known to the Medical Oncology staff who present to clinic with acute or emergent conditions. The student will, in addition to his clinic responsibilities, attend patient management conferences, Medical Oncology grand rounds, and the resident/fellow teaching seminar, all of which are held at Roswell Park. Evaluation of clinical performances and intellectual activity during clinics and conferences will be made by the Medical Oncology senior staff. Upon completion of this rotation, students should have gained an overview of the manifestations of a number of tumors and will have the opportunity to read about and discuss in detail the characteristics of the natural history of some of the more common cancers. They should have learned to develop logical approaches to the diagnosis of cancer. They will also have had an opportunity to

learn about the available and appropriate forms of management provided by the modalities of surgery, radiotherapy, chemotherapy, and biomodulation. No night call will be required, but Saturday and/or Sunday coverage may be involved.

MED-870 INTERNATIONAL HEALTH 4 credits. Modules A-M. Contact departmental office for site location before registering. Prerequisites-Senior medical student; and interviews with Drs. Lee, DiMaggio, and staff of the Division of Geographic Medicine. Drs. Lee, DiMaggio, Lippes, Ambrus, Sillman, and Professor Cohen. Number of students: unlimited.

Students interested in overseas work in developing countries during their fourth year should begin planning their experience no later than the beginning of the third year. The Division of Geographic Medicine has contacts in Africa, Asia, and South America which students should discuss with the staff. Many other opportunities exist. In order to obtain credit for this elective, students must plan their program with the University at Buffalo staff. Correspondence between supervisory staff at the field site and the faculty of the Division of Geographic Medicine, including evaluation of the student's performance, is mandatory.

Field sites should offer the following:

supervision by physicians medically qualified or approved by the country;
stable patient care base (outpatient clinic, hospital, mobile outpatient unit);
adequate subsistence, safety, and housing.

Students will be expected to keep a log of their clinical activities and to present their experience to students.

**** NOTE - If you plan to take an alternate course/ program, you must send me a course description including work schedule & expectations, contact information, web site, and any other applicable information and is subject to Dr. Susan Gallagher's approval.**

MED-871 GEOGRAPHIC MEDICINE: GEOGRAPHIC AND CULTURAL ASPECTS OF HEALTH CARE 4 credits. Module D (course runs from September through December). Prerequisite-Senior medical. Dr. Richard Lee. Number of students: 3.

An introduction to medical anthropology and geography and an intensive review of the communicable and nutritional diseases found in isolated populations, in developing countries, and among the disadvantaged. Intended for students planning to work overseas or among ethnic isolates in North America. The objectives of the course are to provide students with sufficient background in ethnography, anthropometry, and geography to prepare for clinical work in urban ghettos, squatter settlements, rural communities, etc.

Faculty includes individuals from the Departments of Medicine, Social and Preventive Medicine and Anthropology.

Course work will consist of lectures and seminars, case presentations, field trips to rural and inner city sites, and laboratories. Students will be expected to present selected topics in seminars and to write papers on assigned topics.

**** NOTE - If you plan to take an alternate course/ program, you must send me a course description including work schedule & expectations, contact information, web site, and any other applicable information and is subject to Dr. Susan Gallagher's approval.**

MED-880 PALLIATIVE MEDICINE 4 credits. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Jack Freer and Amy McDonald. Number of students: 2.

This rotation is designed to provide the student with a broad-based experience in hospice and palliative medicine. It combines clinical teaching from a variety of sites to give the student an overview of symptomatic therapeutics, communication skills, and interdisciplinary care in a wide range of clinical settings.

The student will spend time at one or more of the following sites: Palliative Care Consultation Services at various Kaleida sites, the Palliative and Pain Management Services at Roswell Park Cancer Institute, and the Palliative Service at the VA Medical Center. The student will also spend part of the rotation at the Center for Hospice and Palliative Care in team meetings, home visits, and the Center's Palliative Care Unit on the Mitchell Campus in Cheektowaga. Standardized patients will assist in teaching important communication skills.

Upon completion of this rotation, the student should have: (1) developed important attitudes concerning appropriate timing of palliative care, based on accurate prognosis determination and rational goals of medicine, (2) gained a sound knowledge base in symptomatic management of patients with a variety of distressing symptoms, and (3) acquired clinical skills in effective but compassionate communication.

MED-890 COURSE AT OTHER UNIVERSITY 4 credits. Contact department before registering. Prerequisite-Senior medical student; approval by Dr. Susan Gallagher; and faculty member of other school. Number of students: unlimited.

This elective will offer the students an opportunity to expose themselves to other hospitals, universities, and their faculty outside of Buffalo in General Internal Medicine or a subspecialty of Internal Medicine. As a general rule, the maximum number of allowable out-of-town rotations in Medicine is two months. Exceptions can be developed for students desiring to pursue specific academic objectives, such as a research-oriented tract in some area of medicine not well represented in Buffalo at the present time. In order to arrange such an elective, a definite program must be set up with the appropriate faculty member of the other school and a letter sent to the student noting the approval along with the course description. The student must then fill out an "Out of Town Elective" card which may be obtained from OME at the Medical School. The card and letter must be submitted to Dr. Susan Gallagher for final approval. It is imperative to note that all Add and Drop Out-of-Town forms must be submitted to BGH, Room B663, for Dr. Susan Gallagher's approval and authorization.

MED-900 PRECEPTORSHIP IN MEDICINE 4 credits. Modules B-L. Contact department before registering. Prerequisites-Senior medical student; approval by Dr. Susan Gallagher; and the faculty member with whom the student chooses to work. Any faculty member, Department of Medicine. Students: unlimited.

This rotation will give the students a broader opportunity to arrange their own preceptorships with any members of the faculty of the Department of Medicine. However, all such programs must be approved by Dr. Susan Gallagher, as well as the faculty member with whom the students choose to work.

Each student will have the opportunity to work closely with a preceptor and become acquainted with diagnostic and therapeutic aspects of patient management in the hospital or office setting either in General Internal Medicine or in one of the subspecialties of Internal Medicine. In addition, they are involved in the initiation of a diagnostic and management plan. They follow the patients throughout their hospital or office course.

These preceptorships include, but are not limited to, General Internal Medicine, Critical Care, Primary Ambulatory Care, Renal Disease, and Hepatology. The preceptorships cannot be used to satisfy specific Medical School requirements for Advanced Medicine 802 and/or experience in Primary Ambulatory Care. To fulfill the requirement as an ambulatory experience, prior approval must be obtained from Dr. S. Gallagher.

At the conclusion of the preceptorship, the students should have improved their technical skills in obtaining proper histories and doing sound physical examinations. They are also expected to have gained insight about diagnostic modalities rendered by the attending physician in General Internal Medicine or subspecialties. The student is required to obtain the approval of their selected preceptor before course registration.

MED-950 RESEARCH IN MEDICINE 4 credits. Modules A-M (by special arrangement with faculty preceptor). Contact department. Prerequisite-Senior medical student and permission of OME and instructor. All members of faculty. Number of students: unlimited.

Students may, by special arrangement, elect to undertake research experience with any member of the faculty. Rotations may extend for periods of one to several modules as long as the student's schedule will allow.

The value of the research, its goals, design, techniques, etc., are to be worked out by the student and his or her faculty preceptor.

DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY

The Department of Microbiology and Immunology offers instruction in microbiology and immunology to undergraduate students in nursing, pharmacy, and medical technology, as well as to dental and medical students. In addition, there is an extensive program for the training of graduate students in microbiology and immunology, leading to the M.A. and Ph.D. degrees. Several medical students have elected to take the combined M.D.-Ph.D. program, enrolling for the Ph.D. degree in the department's program. A number of individuals with doctoral degrees come to the department each year from all over the world for postdoctoral training in microbiology.

The department conducts research in all major areas. Research laboratories are designed and equipped for studies in microbial pathogenesis, molecular biology, parasitology, virology, and immunology, and house faculty members, postdoctoral fellows, graduate students, and staff involved in these investigations.

The department offers an extensive program of formal and informal courses through the Division of Graduate and Professional Education. Medical students are welcome in these courses. Consult the Graduate School Bulletin for a complete listing, and description of graduate courses. A description of elective courses in microbiology for medical students appears below.

MIC-601-0 HONORS MEDICAL MICROBIOLOGY 2 credits; fall semester.

MIC-602-0 HONORS MEDICAL MICROBIOLOGY 2 credits; spring semester. Prerequisite-Second year status. The two honors courses may be taken consecutively or separately by students with no academic difficulties. Staff. Number of students: minimum 7

This purpose of these courses is to provide the academically oriented student with knowledge and concepts applicable to both basic and applied microbiology and immunology. Expanding on information provided in the medical curriculum, the participants in the honors electives in medical microbiology are introduced to clinically relevant presentations in the interface between basic sciences and clinical medicine. Active participation by students in discussions with faculty is an important part of the course. Presentations by faculty and interested students are structured as seminars, panel discussions, or open conferences. Visits to basic and clinical laboratories may be scheduled. No formal examination will be offered; each student will be evaluated according to his or her participation in the program and contribution to open discussions.

After completing each course, the student will have acquired knowledge of recent developments in microbiology and immunology that have an impact on both basic science and clinical medicine.

MIC-950 MICROBIOLOGY RESEARCH 4 credits; fall and spring semesters. Prerequisite-Senior medical student or permission of OME and instructor. Staff. Number of students: unlimited.

This course is intended to provide the student with the opportunity to gain insight and experience in microbiologic and immunologic research methods and techniques in established laboratories with active research programs. Specific activities will be arranged by mutual consent of the student and investigator.

Experiences in a wide range of microbiologic and immunologic research techniques and methods will be available.

Following the completion of the course, students should be able to employ specific laboratory procedures, interpret results, and integrate the results within the context of the overall objectives and significance of the project.

DEPARTMENT OF NEUROLOGY

The Department of Neurology provides opportunities for the student to acquire basic clinical skill in the analysis and management of neurologic problems and to become familiar with common diseases of the nervous and muscular systems. The work represents an extension into the clinical area of the principles learned in other scientific disciplines during the first and second year.

Fourth-year courses provide the opportunities for repeated practical experience in neurologic problem solving and are available by working with patients on the wards and in the outpatient department under the supervision of experienced neurologists, and by attending conferences dealing with current neurologic problems. Instruction is given at the Buffalo Children's Hospital, the Buffalo General Hospital, the Erie County Medical Center, the Veterans Administration Medical Center, and the Millard Fillmore Hospital.

NOTE: Contact departmental office for site location before registering.

NEU-800 SUBINTERNSHIP IN NEUROLOGY 4 credits. Modules B-L. Contact departmental office for site location before registering. Prerequisite: Senior medical student or permission of OME and instructor. Dr. M. Paroski, Curriculum Coordinator. Number of students: 2.

The course is designed to provide an in-depth experience for the student interested in neurology.

The student will work on the Inpatient Neurology Service as part of the treatment team and, under close supervision, will have the responsibility for the primary and continuing care of a reasonable number of patients.

At the end of the course, the student will be able to develop and present a neuroanatomic and differential diagnosis; to select appropriate diagnostic studies with knowledge of the risks and costs to the patient; to prepare a reasonable therapeutic plan for patients with some of the most common neurologic disorders.

***NEU-801 BASIC CLINICAL NEUROLOGY** 4 credits. Modules B-K. Contact departmental office for site location before registering. Prerequisite-Senior medical student or permission of OME and instructor. Dr. M. Paroski, Curriculum Coordinator, Department of Neurology staff. Number of students: 15

The course is designed to give the student an opportunity to develop basic skills in the analysis and management of common neurological problems. Emphasis is placed on a problem-solving approach to diseases of the nervous system.

Under the supervision of members of the Neurology staff, the student will obtain detailed neurologic histories, perform neurologic examinations, and participate in the diagnostic and therapeutic management of ambulatory and hospitalized patients with neurologic problems.

At the end of the course, the student will be able to elicit a detailed, reproducible, and temporally organized neurologic history; to perform a reproducible neurologic examination; to derive neuroanatomic and general neuropathologic differential diagnosis; to perform and interpret the results of a lumbar puncture; to identify and to analyze significant neurologic symptoms and physical findings in patients presented live, on video tape, or in written protocols.

NEU-805 ELECTIVE IN ADVANCED NEUROLOGY 4 credits. Modules C-L. Contact departmental office for site location before registering. Prerequisite: NEU-801. Senior medical student and permission of OME and instructor. By arrangement with department head and involved faculty. Number of students: 2.

The elective in Advanced Neurology is designed for the student with special interest or competence in neurology. It provides an in-depth experience in an area of the student's choice.

This elective may include a limited research experience or a period of concentrated study in the clinical setting.

NEU-890 COURSE AT OTHER UNIVERSITY 4 credits. Modules C-K. Contact departmental office for site location before registering. Prerequisite-NEU-801. By arrangement with the other university and Neurology curriculum coordinator. Number of students: 2.

NEU-950 RESEARCH IN NEUROLOGY 4 credits. Modules C-L. Senior medical student or permission of OME and instructor. Contact departmental office for site location before registering. Number of students: 2.

Students may have an opportunity to work with a faculty member on a research project.

DEPARTMENT OF NEUROSURGERY

The aim of the Department of Neurosurgery is the care of patients with neurosurgical disorders in an academic and teaching environment. All branches of modern neurosurgery, including vascular surgery and pediatric neurosurgery, are practiced in the University-affiliated hospitals. The teaching of undergraduate students emphasizes the recognition of the most common injuries and illnesses of the central nervous system with an elaboration of the appropriate diagnostic workup and the subsequent surgical procedures. The postgraduate education consists of a fully approved five-year neurosurgical residency. Teaching is carried out in each of the affiliated hospitals (Buffalo General Hospital, Children's Hospital, Millard Fillmore Hospital).

There are a number of active research laboratories in the Department, including endovascular, tumor biology, and movement disorders. The endovascular research ranges from computer simulation, animal models of aneurysms and atherosclerosis to clinical trials of new diagnostic and therapeutic techniques. The basic science work is carried out at a new multi-million dollar endovascular facility at the University. The tumor research program utilizes molecular tools, animal models and new drug delivery techniques to develop innovative treatments for brain tumors. This work is conducted at Roswell Park Cancer Institute. The research laboratories are a vital part of the academic vision of the Department of Neurosurgery.

Time is allocated in this specialty for third-year students.

NSR-800 SUBINTERNSHIP IN NEUROSURGERY 4 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. Basic skill in neurological examination. Dr. L Nelson Hopkins, Chairman, and Neurosurgical faculty. Number of students: 3.

The goal of this subinternship is to familiarize the students with clinical entities of the central nervous system and peripheral nerves that are amenable to surgical treatment.

The program includes participation in the clinical activities of the neurosurgical services: workup of patients, neurodiagnostics, and surgical operations. It is anticipated that the students be familiar with the basic essentials of a neurological examination.

Upon completion of the subinternship, the students should be able to recognize standard neurosurgical disease entities; to differentiate between those diseases of the central nervous system that can be treated surgically and those that should be treated by conservative measures; and to recognize signs of increased intracranial pressure, their causes, and potential complications. In addition, the students should be able to develop a sequence of appropriate diagnostic studies leading to a correct diagnosis and be familiar with the basic setup of a neurosurgical operating room and with the basic aspects of a craniotomy, laminectomy, and peripheral nerve exploration. The students will be expected to be present at all clinical conferences, journal clubs, and seminars and be available to observe the initial treatment of head injuries in the Emergency Room. Outside reading throughout the subinternship is required.

NSR-890 COURSE AT OTHER UNIVERSITY 4 credits. Modules B-L. Prerequisite-Senior medical student.

By arrangement with other university and chairman of Department of Neurosurgery.

NSR-950 RESEARCH IN NEUROSURGERY 4 credits. Prerequisite: Senior medical student or permission of OME and instructor.

Students may have an opportunity to work with a faculty member on a research project.

DEPARTMENT OF NUCLEAR MEDICINE

Nuclear medicine is the clinical discipline concerned with the medical uses of radioactive materials. This includes both functional and anatomical imaging of organs and tissues for diagnostic purposes, therapeutic administration of isotopes, and *in vitro* tests based on competitive binding of radiolabeled compounds. The main activity of nuclear medicine is *in vivo* imaging. Nuclear medicine utilizes knowledge of physiology in order to image organ function and thereby derive diagnostic information.

In addition to the teaching program at all levels in the Medical School, the department has an active research program which includes development of new instrumentation and radiopharmaceuticals aimed at improving the extending the usefulness of clinical radioisotope procedures. Students are encouraged to contact Department of Nuclear Medicine members concerning the courses listed below or to make less formal arrangements to pursue their interests in nuclear medicine.

The Department of Nuclear Medicine participates in patient care at Mercy Hospital of Buffalo, The Buffalo General Hospital, VA Medical Center, and Roswell Park Cancer Institute and encompasses a diverse group of individuals in a variety of settings who share the common goal of providing high quality health care to patients.

The primary mission of the Department of Nuclear Medicine is to teach and train students at all levels of education, and to provide the services required to give the best of nuclear imaging techniques to the public in our immediate environment and beyond and to advance the boundaaries of knowledge through our research, our scholarship, and creative activity.

In addition to outpatient clinics, the Department of Nuclear Medicine provides inpatient care, inpatient consultations, nuclear medicine imaging services, and clinical research. Educational programs are available for undergraduate medical students, medical and specialty residents, and continuing education for nuclear physicians and imaging practitioners in the community.

Students taking the Nuclear Medicine clinical rotation in Buffalo will work in one of the affiliated nuclear medicine departments under the guidance of one of the nuclear medicine physicians. The student will participate in patient diagnosis and the intellectual challenge presented in assisting in formulating patient diagnoses and treatment wherever indicated. The clinical variety offered and the freedom to conduct research and to make original clinical observations are definite pluses in this specialty.

Fourth Year Elective courses for medical students are integrated into the other educational activities of the Department. The Fourth Year Elective in Nuclear Medicine is one month of training at one of the four hospitals in the integrated residency program. During the Nuclear Medicine Elective, the student is provided practical experience in the clinical setting in the performance and interpretation of common nuclear medicine procedures. The student develops hands-on experience in history taking, physical examination and the evaluation of the request received from the referring physicians, the importance of the application of the nuclear imaging procedure requested, and evaluation of comparative imaging data as well as laboratory data and their importance in the interpretation of nuclear imaging. The student participates in the total management of the patient under the supervision and guidance of a full time faculty member in Nuclear Medicine. In addition, students participate in departmental programs for the residents and the community. The overall goal of the Elective is to understand the contribution of the field of nuclear medicine to complete patient care.

NUCLEAR MEDICINE is the clinical discipline concerned with all medical uses of radioactive materials (with the exception of sealed radiotherapy sources). This includes static and dynamic imaging of organs and tissues for diagnostic purposes, therapeutic administration of isotopes, and *in vitro* tests based on competitive binding of radiolabeled compounds. Nuclear Medicine combines medicine and basic biological sciences which originally had their roots in the fields of radiology, internal medicine, and pathology. Nuclear Medicine is primarily a clinical diagnostic discipline, it uses physical chemical principles and requires a background in such areas as physiology, biochemistry, mathematics, physics, chemistry, computer sciences, and statistics.

The discipline of Nuclear Medicine uses highly advanced technology in order to perform functional (physiological), rather than anatomical (structural), imaging for patient management. Technological innovations are constantly occurring and rapidly developing in this field.

The field of Nuclear Medicine is an interdisciplinary approach since it interacts with multiple medical specialists. Nuclear physicians are usually University or hospital based, or both.

For more information concerning career and educational opportunities in Nuclear Medicine, contact Dr. Robert S. Miletich, Department of Nuclear Medicine, 105 Parker Hall (South Campus), 3435 Main Street, Buffalo, NY 14214-3007. Tel: 838-5889.

NMD-501

NMD-502 BASIC SCIENCE OF NUCLEAR MEDICINE 2 credits per semester; 2 hours/week; 32 weeks (two semesters); Fall NMD-501; Spring NMD-502. Number of students: unlimited.

The purpose of this course is to help students understand the basic principles of Nuclear Medicine. This lecture course deals with the scientific foundations of Nuclear Medicine which includes radioactive decay, production of isotopes, interaction of radiation and matter, basic nuclear instrumentation, gamma-ray scanners and cameras, health physics and radiation protection. The physiological basis for various radiopharmaceuticals will be discussed as well as the theory and practice of radioimmunoassay.

Upon completing this course, students should have gained an understanding of the physical and chemical foundations of Nuclear Medicine.

NMD-601 INDEPENDENT STUDY 1-4 credits. By arrangement.

Independent study in any selected area of instrumentation, radiopharmaceutical development, or clinical application can be arranged.

NMD-801 CLINICAL NUCLEAR MEDICINE 4 credits. Modules: B-L. Prerequisite-Senior medical student or permission of OME and instructor. Number of students: 2 per site. R-Roswell Park Cancer Institute, G-Buffalo General Hospital, Y-Mercy Hospital, V-VA Medical Center. Contact department office for site location before registering.

This rotation serves as an introduction to the medical uses of radioactive materials. Its aim is to provide practical experience in the performance and interpretation of the common nuclear medicine procedures. Exposure to advanced metabolic functional imaging modalities such as positron emission tomography (PET) is available.

Students will follow routine radionuclide procedures from the preparation and administration of the radiopharmaceutical through to the interpretation and reporting of results. Daily imaging reading conferences will provide the framework for discussion of the role of nuclear medicine in clinical practice.

It is expected that by the completion of this rotation, the student will: (a) be familiar with the most commonly prescribed indications for radionuclide procedures; (b) understand the complementary roles of nuclear medicine and diagnostic imaging in solving various diagnostic problems; (c) understand the physiological basis of the common organ visualization and dynamic function tests; and (d) understand the basic principles for safe handling of radioactive materials.

NMD-950 RESEARCH IN NUCLEAR MEDICINE 4 credits. Modules B-L. Senior medical student or by permission of OME and instructor. By arrangement.

The Department of Nuclear Medicine is engaged in many areas of research including instrument development, radiopharmaceutical and new technique development, and basic and clinical scientific investigations of disease states using both animal models and human patients.

DEPARTMENT OF OPHTHALMOLOGY

The aims of the Department of Ophthalmology are teaching, research, and patient care. Instruction in clinical ophthalmology, ophthalmic surgery, basic and clinical research is available to medical students, resident physicians, and practicing ophthalmologists.

Chair, Department of Ophthalmology: *James D. Reynolds, M.D., Professor*

Director of Medical Education: *James J. Reidy, M.D., F.A.C.S., Associate Professor*

Program Director: *James D. Reynolds, M.D., Professor*

Department Administrator: *Ms. Elaine Taylor*

Clinical sites: Children's Hospital, Buffalo VA Hospital, Ross Eye Institute

Departmental Web Site: *<http://smbs.buffalo.edu/ophthalmology>*

OPH-800 CLINICAL CLERKSHIP IN OPHTHALMOLOGY. *4 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. Course Director: James Reidy, M.D. Contact Ms. Elaine Taylor for registration and site location(s). Number of students: 3.*

This course is specifically designed for the medical student interested in pursuing a career in ophthalmology. The goals of the course are to build a foundation of knowledge about clinical ophthalmology. The course is divided into two parts: the first part is designed to expose the student to adult clinical and surgical ophthalmology, and the second portion is designed to expose the student to pediatric/adolescent ophthalmology (clinical and surgical). The student will attend all weekly departmental conferences and lectures. Each student will be responsible for a case presentation at grand rounds. A required reading list and a monthly departmental schedule will be provided prior to starting the course.

OPH-890 COURSE AT OTHER UNIVERSITY *4 credits. Modules B-L. Contact James Reynolds, MD. prior to registration. Prerequisite-Senior medical student. Number of students: unlimited.*

This course is specifically designed for the medical student interested in pursuing a career in ophthalmology. The goals of the course are to build a foundation of knowledge about clinical ophthalmology. Arrangement must be made with the other university, with the School, and with the chairman of the Department of Ophthalmology, University at Buffalo.

OPH-950 RESEARCH IN BASIC OR CLINICAL OPHTHALMOLOGY *4-8 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. For information regarding ongoing research projects in the department contact Steven Fliesler, Ph.D., Director of Research (Fliesler@buffalo.edu). Students may spend either 4 weeks or 8 weeks, however 8 weeks is preferable. Number of students: 2.*

This course is designed to introduce the student to the methods of basic and/or clinical ophthalmic research. Goals of the course are to learn how to develop a research protocol, collect and analyze data, and how to effectively present data. Students will be encouraged to present their completed projects at the annual university research day. Travel funds are available through various departmental sources for presentations at national scientific forums.

DEPARTMENT OF ORTHOPAEDICS

The Department of Orthopaedics office and laboratories are based at the Erie County Medical Center. The instructional programs utilize the clinical facilities and the faculty located at the Buffalo General, Children's, and Erie County Medical Center.

The Department of Orthopaedics introduces medical students to the basic principles of diagnosis and treatment of patients with musculoskeletal injuries and/or diseases. It has been estimated that approximately 30 percent of all patients seeking a physician have musculoskeletal complaints. Thus, it behooves all medical students to have some understanding of the basic concepts of the normal and abnormal functioning of this system. An introduction is provided to the understanding of fracture healing and the management of the injured. Other abnormalities studied include arthritis, infections such as osteomyelitis and pyogenic arthritis, congenital and growth-related disturbances, neoplasms both primary and metastatic, metabolic bone disease and mechanical abnormalities producing low back pain symptoms, bursitis, and tendonitis. The overall care of these patients is stressed including not only acute care but all measures necessary to rehabilitate the patient to his normal activities. These principles are learned in clinics, Emergency Rooms, hospital wards, and physicians' offices. Considerable didactic instruction is available at conferences, lectures, audiovisual sound-slide programs, and materials from the bone pathology laboratory.

Time is allocated during this specialty block for fourth-year students.

The faculty includes 15 full-time and 33 voluntary faculty and the 16 Orthopaedic residents in the University program.

ORS-805 ORTHOPAEDIC SURGERY 4 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Robert Galpin. C-Buffalo Children's Hospital. Number of students: 3

This course serves as an introduction to acute and chronic management of musculoskeletal trauma focusing on the pediatric patient. Students participate in the clinical care of both traumatic and non-traumatic patients. Students will have both surgical and non-surgical experiences and will participate in pediatric specialty clinics. Students will be expected to attend one orthopaedic conference at CHOB and one city-wide conference per week.

ORS-805 ORTHOPAEDIC SURGERY 4 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Christopher Mutty. E-Erie County Medical Center. Number of students: 3.

This course would serve as an introduction to the acute and chronic management of the musculoskeletal injury. Students would participate in the clinical care of the trauma patient both surgically and nonsurgically. They would be involved with two orthopaedic conferences per week at the ECMC and one city-wide orthopaedic conference per week.

ORS-805 ORTHOPAEDIC SURGERY 4 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Kenneth Krackow. G-Buffalo General Hospital. Number of students: 2

This course serves as an introduction to acute and chronic management of musculoskeletal trauma. Students participate in the clinical care of both traumatic and non-traumatic patients. Students will have both surgical and surgical experiences in the areas of trauma, total joint replacement and spine surgery. Students will be expected to attend one orthopaedic conference at BGH and one city-wide conference per week.

ORS-806 ORTHOPAEDIC TRAUMATOLOGY 4 credits. Modules B-L. Prerequisites-Senior medical student or permission of OME and instructor. Dr. Mark Anders. Number of students: 3.

This course would serve as an introduction to the acute and chronic management of the musculoskeletal injury. Students would participate in the clinical care of the trauma patient both surgically and nonsurgically. They would be involved with two orthopaedic conferences per week at the ECMC and one city-wide orthopaedic conference per week.

ORS-832 AMBULATORY ORTHOPAEDIC SURGERY 4 credits. Modules B-L. Prerequisites-Senior medical student or permission of OME and instructor. Drs. Bone, Stegemann, Rohrbacher, Smolinski, Lifeso, and Anders. Number of students: 2.

Course Objectives: The course is designed to advance the students' knowledge and skill in diagnosing and management of outpatient musculoskeletal (m.s.) problems. This elective will build on the students' previous knowledge gained from ICM and the third year week in orthopaedic surgery. It will enhance students' ability to diagnose and treat the ambulatory patient with musculoskeletal complaints.

Purpose: It is generally agreed that at least 15 percent of chief complaints of patient presenting to a primary care physician are of the musculoskeletal system. At the present time students at UB Medical School have only one week of introduction to orthopaedic medicine in their third-year surgical rotation. This elective would give students the opportunity to greatly increase their exposure to outpatient orthopaedic medicine. It will be designed for those students planning to go into primary care medicine.

Method: The elective will be for one month of the fourth year. Students will attend outpatient orthopaedic clinics at the Erie County Medical Center and see patients in the offices of the orthopaedic staff at ECMC. The students will be taught important history taking techniques for musculoskeletal problems. They will be taught physical diagnosis of the musculoskeletal system and learn to develop a differential diagnosis of musculoskeletal disease. Appropriate (and cost efficient) diagnostic workup of various musculoskeletal problems will be learned.

The students will have the opportunity to see continuum of orthopaedic treatment. This will give them important knowledge to counsel their own patients with musculoskeletal problems and have a better understanding of which patients will be better served by getting an orthopaedic consultation.

Textbooks on basic physical diagnosis and essentials of orthopaedic surgery will be used. Videotapes of the proper way to perform a musculoskeletal physician exam will also be utilized.

Evaluation: Faculty and student course critiques will be obtained. The student evaluation will be assessed by oral exam and observation of the students' skills during the course.

ORS-832 AMBULATORY ORTHOPAEDIC SURGERY – Sports Medicine 4 credits. Modules B-L. Note: A “X” after the module in the Class Schedule indicates the University Campus as the site. Prerequisites-Senior medical student or permission of OME and instructor. Drs. Leddy, Smolinski, Fineberg, Wind, Bison, Marzo, Lawrence, Snyder, Barodawala. FNP John Hanavan. Number of students: 2.

Course Objectives: The course is designed to advance the students’ knowledge and skill in diagnosing and management of outpatient musculoskeletal (m.s.) problems. This elective will build on the students’ previous knowledge gained from ICM and the third year week in orthopaedic surgery. It will enhance students’ ability to diagnose and treat the ambulatory patient with musculoskeletal complaints.

Purpose: It is generally agreed that at least 15 percent of chief complaints of patient presenting to a primary care physician are of the musculoskeletal system. At the present time students at UB Medical School have only one week of introduction to orthopaedic medicine in their third-year surgical rotation. This elective would give students the opportunity to greatly increase their exposure to outpatient orthopaedic medicine. It will be designed for those students planning to go into primary care medicine.

Method: The elective will be for one month of the fourth year. Students will attend the outpatient clinic at the UB Sports Medicine Institute. The Institute treats a wide variety of musculoskeletal and sports medicine problems in athletes and the general population. An evening walk-in clinic provides exposure to acute musculoskeletal problems. Students can spend time in our physical therapy suite, learn musculoskeletal radiology, see athletes in the UB training room, learn about being a team physician, and participate in game/event coverage. Our staff includes sports medicine-trained orthopedic surgeons, sports medicine-trained primary care physicians, and an orthopedic nurse practitioner. Students will be taught important history taking techniques for musculoskeletal problems. They will be taught physical diagnosis of the musculoskeletal system and learn to develop a differential diagnosis of musculoskeletal disease. Appropriate (and cost efficient) diagnostic workup of various musculoskeletal problems will be learned. The students will have the opportunity to see the continuum of orthopaedic treatment. This will give them important knowledge to counsel their own patients with musculoskeletal problems and have a better understanding of which patients will be better served by getting an orthopaedic consultation. Textbooks on basic physical diagnosis and essentials of orthopedic and sports medicine will be used. Videotapes of the proper way to perform a musculoskeletal physician exam will also be utilized.

Evaluation: Faculty and student course critiques will be obtained. The student evaluation will be assessed by oral exam and observation of the students’ skills during the course.

ORS-890 COURSE AT OTHER UNIVERSITY 4 credits. Modules B-L. Prerequisite-Senior medical student.

By arrangement with the other university and chairman of the Department of Orthopaedics.

ORS-950 RESEARCH IN ORTHOPEDIC SURGERY 4 credits. Prerequisite: Senior medical student, completed Orthopaedic Research Project outline (Department of Orthopaedic Surgery Website) with all required signatures, IRB approval if appropriate. Dr. L. Bisson

Purpose: This course will allow students to complete a research project. The project must be determined and clearly outlined prior to attending this session. In addition to working on their research question, students will be exposed to a wide range of projects taking place in the lab. They will attend weekly orthopaedic conferences and present their findings at the monthly laboratory meeting. Completed projects may be considered for publication submission.

Evaluation: Faculty and student course critiques will be obtained. The student will be assessed on a written description of their project and observation of the student’s skills during the course.

NOTE: Students may also be interested in ANA 801. This course is designed to review and expand upon the gross anatomy of the musculoskeletal system as learned in the first year medical school course. Students will spend substantial time dissecting in the gross anatomy lab and preparing prosections for presentation to the faculty and student group. Didactic sessions will review and discuss the anatomy of the system, especially as it pertains to clinical syndromes commonly seen in the practice of general orthopedic surgery and orthopedic sports medicine.

ANA 801 ADVANCE MUSCULOSKELETAL ANATOMY AND CLINICAL CORRELATION 4 credits. Modules H and J Prerequisite-ANA 500, Senior medical student, or permission of OME and instructor. Dr. John Marzo. Number of students: 8-10

This course is designed for the student with an interest in completing a comprehensive anatomical dissection of the musculoskeletal system. Students will personally dissect the limbs and major joints of the upper and lower extremities with an emphasis on surgical exposures to these areas. Didactic lectures will present clinically related diagnosed and treatments for conditions of the musculoskeletal system. The course will be particularly relevant for medical students interested in orthopedic surgery, sports medicine, or physical medicine and rehabilitation.

General information

Lectures: Thursdays 1 PM Room 160 Farber Hall (UB Sports Medicine)

Laboratory: Thursdays 3 PM to 5 PM, other times as necessary

All participants are required to wear scrubs and/or a laboratory coat as well as closed shoes in the laboratory sessions. You must wear latex or vinyl gloves (provided) any time you are dissecting. Protected eye wear is recommended, but not required. All other rules of conduct in Anatomy 500 will be imposed during Anatomy 605

Required books: Moore and Dalley; Clinically Oriented Anatomy, 4th edition
Grant's Atlas of Anatomy, 11th edition
Grant's dissector, 12th edition
Bernstein; Musculoskeletal Medicine, 1st edition

Grades will be determined based on written exams (2), a final oral examination, and active participation in the laboratory and didactic lecture sessions. The written exams will test knowledge of the anatomy of: 1. the spine and upper extremities 2. the pelvis and lower extremities. The oral exam and other participation will test knowledge of clinically relevant anatomy. Each of the four measures of student performance will be given equal weight in the final grade. Letter grades will be assigned using the following schedule:

H = Honors (90% or higher)
HS = High Satisfactory (85 – 90%)
S = Satisfactory (65 – 85%)
U = Unsatisfactory (65% or less)

DEPARTMENT OF OTOLARYNGOLOGY

The Department of Otolaryngology offers courses tailored to meet undergraduate, postgraduate, and continuing education for the primary care physician and practicing otolaryngologist, in comprehensive patient care and in recognizing emergency situations, as well as in understanding the diagnosis and management of the otolaryngologic diseases and trauma, neoplasia, congenital disorders of the head and neck.

The experiences in the outpatient department will provide opportunities for developing skills of information gathering and intensive, detailed regional topographic physical examination, analysis of problems, and satisfactory patient-doctor relationship. The clinical facilities are maintained in each of the following hospitals: Millard Fillmore Gates Circle Hospital, Veterans WNY Healthcare System, Buffalo General Hospital, Erie County Medical Center and Women and Children's Hospital. In addition, the Department of Otolaryngology conducts monthly teaching conferences on all aspects of otolaryngology and head and neck oncology.

Preparation of a paper suitable for publication or presentation of a didactic lecture at an institution is required for granting of honors. Time is allocated in this specialty for third-year students.

NOTE: *Contact the department course coordinator for site location before registering. (Beverly Hurley 362-9585)

OTO-809 CLERKSHIP-OTOLARYNGOLOGY 4 credits. Modules B-L. Contact departmental office for site location before registering. Prerequisite: Senior medical student or permission of OME and instructor. Children's Hospital of Buffalo, Millard Fillmore Gates Hospital, Veteran's WNY Healthcare System, Number of students: 2 (total per module), one at each facility, with permission, may spend two weeks at one facility, two weeks at a second facility. For available locations and preferences please contact the course coordinator: Beverly Hurley (362-9585)

The objective of this rotation is to give a broad spectrum of otolaryngology-head and neck surgery and its related fields. The students will be exposed to techniques of information gathering, physical examinations, analysis of problems, and practical approach to the solution of problems. They will also have direct exposure and clinical experience in physical examination. Students should be able to recognize various disorders and diseases in the field of otolaryngology, and to perform complete otolaryngologic and head and neck examinations. Students will be responsible for direct patient care.

OTO-811 CLERKSHIP IN HEAD AND NECK SURGERY 4 credits. Modules B-L. Contact departmental office for site location before registering. Prerequisite: Senior medical student or permission of OME and instructor. Kaleida sites (Buffalo General Hospital, Children's Hospital of Buffalo); Veteran's WNY Healthcare System; Erie County Medical Center; Sister's Hospital of Buffalo, Roswell Park Cancer Institute. Number of students: 1; not to overlap with students taking OTO-809. Contact course coordinator: Beverly Hurley (362-9585) for site location before registering.

The intent of this rotation is to familiarize the students with neoplasia and reconstructive procedures of the head and neck. Upon completion of the course, the students should be able to diagnose and manage neoplasia in head and neck and be responsible for direct patient care.

OTO-812 CLERKSHIP IN FACIAL PLASTIC SURGERY 4 Credits Modules B-L. Site: Millard Fillmore Gates Hospital and 1237 Delaware Avenue. Number of students 1. Not to overlap with students taking OTO-809. ***Please contact course coordinator: Beverly Hurley at 362-9585 before registering.**

The goal of this rotation is to familiarize students with facial plastic and reconstructive surgeries. Upon completion of the course, the student should be able to diagnose and manage a variety of facial plastic and reconstructive type problems and be responsible for direct patient care. This course will include coverage of topics ranging from cosmetic to reconstructive procedures.

OTO-820 PRECEPTORSHIP 4 credits. Modules B-L. Contact departmental office for site location before registering.

Prerequisite: Senior medical student or permission of OME and instructor. Number of students: 6; not to overlap with OTO-809 or OTO-811. Contact course coordinator: Beverly Hurley (362-9585) for site location before registering.

The goal of this course is to familiarize the student with the more common ENT problems seen in a physician's office. The objective of this course will be achieved mainly by rotation of the student through the various clinics in the affiliated hospitals as well as the evaluation and examination of patients in the private doctor's office setting.

Upon completion of the course, the student should be able to perform an adequate head and neck examination. The basic care of the emergencies in this particular specialty will also be covered, namely, the management of acute blood loss and acute airway obstruction.

OTO-890 COURSE AT OTHER UNIVERSITY 4 credits. Modules B-L. Contact departmental office for site location before registering. *Prerequisite: Senior medical student.*

By arrangement with other university and course coordinator or Chair of Department of Otolaryngology. Out of town elective card must be completed and approved prior to scheduling.

OTO-950 RESEARCH IN OTOLARYNGOLOGY 4 credits. Modules B-L. Contact departmental office for site location before registering. *Prerequisite: Senior medical student or by permission of OME and instructor. Satisfactory completion of OTO-809. Otolaryngology faculty. Number of students: 1. Research students are restricted to nonclinical work or clinical work which specifically does not interfere with other students assigned for clinical clerkships or preceptorships at that facility (see OTO-809 and OTO-811) or with that attending (OTO-820).*

The objective of the course is to provide a research opportunity for fourth-year medical students to participate in ongoing research projects within the department. The cell culture lab affords an opportunity for basic research, working with *in vitro* cultures, *in vitro* chemosensitivity testing for new chemotherapeutic agents, or designing an individual research project. Clinical research is available in a number of forms ranging from head and neck oncology to general otolaryngology, otology, pediatric otolaryngology, and infectious disease and immunology. Any students interested may contact the course coordinator: Beverly Hurley (362-9585).

DEPARTMENT OF PATHOLOGY AND ANATOMICAL SCIENCES

The Department of Pathology and Anatomical Sciences is responsible for introducing the student to the structural and functional alterations in disease and the mechanisms whereby such alterations are produced. The subject represents both an applied science that touches almost every other area of medical knowledge and hospital practice

The dual aspect of pathology is emphasized in the teaching program. Initially, the fundamental principles of disease, such as inflammation and repair, metabolic and hemodynamic disturbances, and neoplasia are presented parallel to actual base studies based on current autopsies and surgical material. From the beginning, an attempt is made to correlate basic principles, morbid anatomy, and clinical syndromes. Later in the course, specific diseases are studied in detail. The characteristic changes produced by disease, in particular organ systems and their relationship to clinical manifestations, are explored.

Laboratory work involves the study of gross and microscopic specimens and may be supplemented by student attendance at autopsies, as well as by student participation in informal seminars.

The department is also involved in the organization and teaching of several subjects in collaboration with other departments which present to the student an integrated view of normal and abnormal function of selected organ systems.

The department offers a program leading to the PhD in Experimental Pathology which may be adapted to the needs of students who wish to obtain a combined M.D.-Ph.D. as preparation for a career in academic medicine. Such programs are planned on an individual basis.

Members of the staff are engaged in research in immunochemistry, immunopathology, renal pathophysiology, experimental renal disease, experimental endocrinology and hypertension, genitourinary pathology, muscle pathology, perinatal and adult neuropathology, reticuloendothelial function, biology and neoplasms.

PTH-618-0 – Electron Microscopy - Variable credit; second semester. Prerequisite – Histology course. Dr. Nickerson, Number of students: 15

Pathology 618 is designed to familiarize the students with the principles and practice of electron microscopy as it is applied to biomedical research.

Lectures will concentrate on the theory behind the electron microscope and the rationale behind general and specific preparation methods for the technique. The laboratory will emphasize the actual application of the technique.

Upon completing the course, students will be able to process tissue from fixation through electron microscopy, thereby producing acceptable electron micrographs and be able to interpret them.

PTH-620-0 – Endocrine Pathology 1-3 credits; spring semester. Prerequisites – Biochemistry and General Pathology. Dr. Samuel Gallant and staff. Number of students: 20.

The objective of this course is to provide an in-depth analysis of the pathology and pathophysiology of endocrine disease. Special emphasis will be given to correlating biochemical and metabolic derangements with structural alterations. Recent advances derived from laboratory and clinical investigations will be discussed

Upon completing the course, the students will be able to recognize, predict, and interpret the biochemical derangements in various endocrine disorders and to correlate these with structural alterations.

PTH 699 Independent Study in Pathology Variable credit; Spring semester. Prerequisite-PTH600 or equivalent. Department Chairman and staff

The objective of this course is to supplement systemic pathology course experience with in-hospital experience in practical pathology.

Students will receive practical exposure to autopsy and surgical pathology in a hospital care setting. At the conclusion of the course, students should have improved abilities to use knowledge of disease processes and to apply this knowledge to actual diagnostic and management problems.

PTH-800 HOSPITAL PATHOLOGY 4 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Lucia Balos, Number of students 3. G-Kaleida Health Systems/Buffalo General Hospital.

This rotation provides students with a four-week elective period in hospital pathology, specifically autopsy and surgical pathology, as they relate to patient care. Emphasis is placed on a correlation of pathologic findings and clinical problems.

Students may also have an opportunity to obtain some practical experience in clinical pathology, which includes the areas of microbiology, clinical chemistry, hematology and blood banking. Particularly in this part of the elective, students develop a better understanding of the role of the laboratory in the hospital and of how to best utilize the services of the laboratory.

PTH-800 HOSPITAL PATHOLOGY 4 credits. Modules B-L. Prerequisite-Senior medical student or permission of OME and instructor. Number of students:1-2. R. Roswell Park Cancer Institute.

This rotation allows the medical student to be exposed to oncologic pathology in the Anatomic pathology section of the Department of Pathology and Laboratory Medicine at Roswell Park Cancer Institute. The student may elect a four week period of time for this elective. The emphasis is on Surgical Pathology as well as Cytopathology and may include Flow Cytometry, Cytogenetics, or Molecular Diagnosis. The students will assist in various laboratory procedures and gain expertise in evaluation/diagnosis of tissue specimens from cancer patients. The pathologic findings are correlated with the clinical findings. There is extensive interaction with the pathology faculty, residents, and fellows. Participation in the Institute's Multidisciplinary Tumor Boards will give the student a unique perspective on the relationship between the pathology diagnosis and patient management. Students have an opportunity to assist in autopsies and are expected to participate in Departmental conferences.

PTH-810 FORENSIC PATHOLOGY 4 credits. Modulates B-L Note: a "E" after the module in the Class Schedule indicates the Erie County Medical Center (Medical Examiner's office) as the site. Prerequisite-Senior medical student or permission of OME and instructor. Dr. James Woytash. Number of students: 3

This rotation will provide the future physician the following foundations:

- a. Determination of the Cause of Death
- b. Determination of the Manner of Death
- c. Type of case referred to Medical Examiner/Coroner
- d. Review of Gross Anatomy

Upon completion of the future physician will be able to:

- a. Properly fill out a death certificate
- b. Understand what cases must be referred to the Medical Examiner

PTH-890 COURSE AT OTHER UNIVERSITY 4 credits. Modules B-L, fourth year. Prerequisites- Senior medical student. By arrangement with other university and department chairman

PTH-950 RESEARCH IN PATHOLOGY 4 credits. Modulates B-L. Prerequisite- Senior medical student or permission of OME and instructor. Department chairman and staff.

The goals of this course are to provide students with insight into research and practical experience in a small project.

Students will engage in research projects involving one of the current areas of scientific investigation engaged in by department members. These include experimental immunology, transplantation immunology, cytokines, neuroimmunology, experimental hypertension, experimental endocrinology, cell biology of tumors, and neuropathology.

At the end of the research course, the students should have developed an appreciation of the investigative approach and practical experience in a small research project.

DIVISION OF ANATOMY AND CELL BIOLOGY

The Division of Anatomy and Cell Biology is organized to provide instruction in all aspects of the structure of the human body. The three major divisions-Histology and Embryology, Gross Anatomy, and Neurosciences offered in the first year curriculum and for understanding the human organism in health and disease, the study of structure and its correlation with function are of prime importance.

In addition to the teaching program in Medicine, the department is active in a variety of research projects and offers opportunities for advanced study and training toward a career in medical research and teaching.

***ANA-500-0 GROSS HUMAN ANATOMY** 6 credits; fall semester Required course for freshman medical student. Dr. Hard and staff. Number of students: 135-140.

This course is designed to examine the nature and organization of the major, grossly visible structural components of the dissected human body.

The course emphasizes the normal functions of the above components, particularly as these functions relate to clinical management of patients. The course is composed of lectures and demonstrations, laboratories, and clinical correlations. Lectures and demonstrations are given by the Gross Anatomy staff. These involve a presentation of anatomical details along with general functions and aspects of clinical relevance. In the laboratory, pairs of students, under the guidance of the faculty, dissect and present the anatomical detail and general organization of assigned regions to the other students at their dissecting table. Additional study aids, such as radiographs, CAT-scans, MRI's, special dissections, and cross – sections are also made available. Clinical correlations are presented throughout the course to augment the material in each region.

By the end of the course, the gross anatomy of the entire human body will have been surveyed. Experience gained by dissection should permit students to relate the more advanced anatomy of their interests to that of the human body as a whole, and to the interests of their colleagues, as in consultation or in presentation of patients.

ANA-603-0 MORPHOLOGIC HEMATOLOGY 3 credits; spring semester. Prerequisites: Permission of instructor. Dr. Glomski Number of students: 8

The course is designed for those students desiring an opportunity to study cellular hematology in general, and in particular to study normal and pathologic blood and bone marrow preparation beyond the usual experiences afforded to all medical students in their regular prescribed curriculum.

The course present a systemic study of normal and abnormal development of the hemopoietic cells as observed in stained dry film smears of blood and bone marrow. Representative examples of the major hematocellular diseases are presented.

At the completion of the course, the students can expect to have broadened their knowledge of hemopoiesis and hemopoietic disease particularly in the morphologic aspects of these subjects. They will also have increased their skills in the interpretation of blood and bone marrow preparations.

ANA-605-0 INFORMAL STUDIES IN HUMAN DISSECTION 1-4 credits by prior arrangement; fall or spring semester. Prerequisites-ANA-500 and permission of instructor. Dr. Frank Mendel. Number of students: unlimited

This course will enable students, according to their particular needs, to perform a dissection of one particular region to a complete dissection of the human body, using either standard or special techniques of dissection and preparation.

Faculty will be available initially to plan the dissection schedule and procedures, and will thereafter be available for consultation as needed. Some students may only wish an opportunity to personally dissect certain regions not assigned to them during the introductory course.

Others may need more detailed study as a preparation for a contemplated career involving either a particular clinical specialty or teaching of gross human anatomy. Scheduled dissecting time, staff supervision, and course credit will be assigned accordingly.

At the conclusion of this course, students will hopefully have acquired skills and experience in the techniques of dissection and preparation.

ANA-699-0 INDEPENDENT STUDY IN ANATOMY Variable credit; fall and spring semesters. Staff; by permission of instructor

This course is designed for students who wish to examine in detail a particular subject in the field of anatomy, either at the gross or microscopic level.

The course will be supervised by a faculty member whose personal interest is in the area selected by the student. This course will provide the student with an opportunity to work closely with an instructor on a specific problem.

ANA-800 SENIOR TEACHING IN ANATOMY AND CELL BIOLOGY 4 credits. Modules C-F, H-K Prerequisite-Senior medical student, permission of OME and permission of instructor. Drs. Cohan, Cotter, and Hard. Number of students: Neuro: 8 per module/Gross 6 per module/Histo 4 per module.

This course is designed to give seniors an opportunity to assist in the teaching of Gross Anatomy, Histology, or Neuroscience. It will provide an excellent opportunity to understand and teach the basic science concepts on which much of clinical medicine depends.

The student will serve as a teacher in the laboratory in which ever course is selected. Because of the nature of the laboratory, the student must spend a minimum of one month in the course. This will provide for continuity in the program and will also permit the student to have had a long enough period to become acclimated to the department and course. An arrangement may be made with the coordinator of the course so that the student can be registered during the time when a specific body area, tissue, or system is to be studied by the first-year class and which the student would prefer to review and teach.

At the completion of this course, the student will have had an opportunity to act as a teacher, having tied together basic anatomical concepts so that clinical concerns may be more easily understood. Also the student should come to appreciate some of the pleasures and problems of teaching.

Before registering, students must receive permission from the coordinator of the course (Gross - Dr. Hard), (Histology - Dr. Cotter), or (Neuroscience - Dr. Cohan) they are interested in teaching.

ANA 801 ADVANCE MUSCULOSKELETAL ANATOMY AND CLINICAL CORRELATION 4 credits. Modules H and J Prerequisite-ANA 500, Senior medical student, or permission of OME and instructor. Dr. John Marzo. Number of students: 8-10

This course is designed for the student with an interest in completing a comprehensive anatomical dissection of the musculoskeletal system. Students will personally dissect the limbs and major joints of the upper and lower extremities with an emphasis on surgical exposures to these areas. Didactic lectures will present clinically related diagnosed and treatments for conditions of the musculoskeletal system. The course will be particularly relevant for medical students interested in orthopedic surgery, sports medicine, or physical medicine and rehabilitation.

General information

Lectures: Thursdays 1 PM Room 160 Farber Hall (UB Sports Medicine)

Laboratory: Thursdays 3 PM to 5 PM, other times as necessary

All participants are required to wear scrubs and/or a laboratory coat as well as closed shoes in the laboratory sessions. You must wear latex or vinyl gloves (provided) any time you are dissecting. Protected eye wear is recommended, but not required. All other rules of conduct in Anatomy 500 will be imposed during Anatomy 605

Required books: Moore and Dalley; Clinically Oriented Anatomy, 4th edition
Grant's Atlas of Anatomy, 11th edition
Grant's dissector, 12th edition
Bernstein; Musculoskeletal Medicine, 1st edition

Grades will be determined based on written exams (2), a final oral examination, and active participation in the laboratory and didactic lecture sessions. The written exams will test knowledge of the anatomy of: 1. the spine and upper extremities 2. the pelvis and lower extremities. The oral exam and other participation will test knowledge of clinically relevant anatomy. Each of the four measures of student performance will be given equal weight in the final grade. Letter grades will be assigned using the following schedule:

H = Honors (90% or higher)
HS = High Satisfactory (85 – 90%)
S = Satisfactory (65 – 85%)
U = Unsatisfactory (65% or less)

DEPARTMENT OF PEDIATRICS

The Department of Pediatrics provides educational experiences at the Children's Hospital of Buffalo, Mercy Hospital, Roswell Park Cancer Institute, and affiliated clinics and offices. The departmental faculty represent a broad range of medical expertise with a strong focus in primary care as well as specialists in all major pediatric subspecialty areas. The Department of Pediatrics has a tradition of excellence in clinical teaching and has maintained a commitment to the education of all medical students toward the understanding of major medical and social issues in child health. Students who participate in educational experiences with the Department of Pediatrics will be provided opportunities to study in both inpatient and ambulatory clinical settings. All educational experiences will be closely supervised by full-time faculty members. Students will be provided educational goals and timely feedback on their progress.

At the Children's Hospital, inpatient teaching experiences will include the evaluation of children with a wide range of serious medical problems. Students will be expected to demonstrate proficiency in the performance of appropriate historical and physical examination skills for children of all ages from infancy through adolescence. Students will participate actively in ward teaching rounds and learn not only the pathophysiology of pediatric disease, but also the clinical art of caring for children with medical illnesses. Clinical teaching experiences will include subspecialty services in adolescent medicine, allergy/immunology/rheumatology, ambulatory pediatrics, cardiology, endocrinology, emergency medicine, critical care, gastroenterology/nutrition, hematology/oncology, medical genetics, infectious disease, neonatology, nephrology, pulmonary disease, and developmental and rehabilitative pediatrics. During pediatric electives and clerkships, students are expected to participate in regularly scheduled departmental and divisional seminars. All departmental educational programs are open to any interested student.

Educational and clinical experiences are also available at the Mercy Hospital, which include studying general pediatrics in the ambulatory setting. Emphasis is placed on continuity of clinical care, growth and development, as well as common pediatric diseases. Experiences at the Roswell Park Cancer Institute provide students with an introduction to the diagnosis and treatment of childhood malignancies as well as an appreciation of the impact of chronic disease upon children and families.

Research experiences during the fourth year of medical studies are available for both bench research and patient-related studies. These research opportunities allow students to work directly with senior faculty and to gain insight into the process of conducting biomedical research, analyzing data, and understanding ethical issues related to biomedical research.

***PED-700 PEDIATRIC CLINICAL CLERKSHIP** 6 credits. Blocks 1-4. Contact departmental office for site location.

Prerequisite-Junior medical student. Pediatric faculty. This is a required six-week junior-year clerkship. Clerkship Coordinator: Wayne Waz, M.D..

The goals of the Pediatric Clerkship are to introduce medical students to the specialty of pediatrics, and to give them the opportunity to acquire knowledge and skills in this field by means of clinical experiences under expert guidance.

Students will work in small groups and will be assigned to a variety of clinical activities at the Children's Hospital and its related facilities, as well as Mercy Hospital. Students will have the opportunity to see pediatric patients and their families in various inpatient and outpatient settings including pediatric wards, newborn nurseries, well-child clinics, and community pediatric practices. Throughout this rotation, students will be assigned patients, work them up, and present them to the teaching staff for comments and evaluation. Emphasis will be placed on having students fully involved in the comprehensive care of pediatric patients for a more thorough understanding of this specialty. Students will perform night and weekend duties during this rotation. A clinical problem-based curriculum will enable students to focus on common pediatric problems. This pediatric clerkship includes regularly scheduled seminars, discussions, and lectures, as well as teaching rounds with faculty and resident staff. Pediatric residents and attendings will arrange for talks and seminars related to case material and pertinent subjects. Audiovisual and library facilities are available for self-education.

At orientation on the first day of the clerkship, each student will receive detailed written course materials describing clerkship objectives, responsibilities, course curriculum, and student evaluation.

PED-800 SUBINTERNSHIP IN PEDIATRICS 4 credits. Modules B-L, full time, including nights and weekends. Contact departmental office for availability and site location. Prerequisite-Senior medical student. Pediatric faculty are assigned as attendings by the chairman. Number of students: 4.

The objectives of the rotation are to provide senior students with an intensive experience in inpatient clinical pediatrics with more direct patient responsibility than the junior clerkship so as to improve skills in the diagnosis and management of acute pediatric problems. The subinternship is offered at Children's Hospital.

The subintern will act as the primary physician, caring for the patients under the supervision of the resident and attending staff. The student will be expected to function essentially as an intern; however, closer supervision will be given by the senior residents. Admissions will be assigned to the subintern. Night call will be approximately every fourth night, when the subintern will be the primary caretaker for all the patients on that service, in addition to admitting new patients. A complete history and physical examination will be performed on all patients assigned to the subintern, who will then formulate an assessment and plan of management in conjunction with the senior staff. The student will learn to perform procedures necessary for patient care and will follow patients throughout their hospitalization, writing all orders and daily progress notes in the problem-oriented format.

Upon completion of the subinternship, the student should strengthen basic skills of history taking and physical examination of the pediatric patient as well as becoming more proficient in establishing a problem list and planning and adapting an appropriate course of management throughout the hospital course. Skills in case presentation, seeking consultations, and direct communication with the private physician, family, and all members of the patient-care team should be attained.

PED-803 DEVELOPMENTAL PEDIATRICS AND PEDIATRIC REHABILITATION 4 credits. Modules B-L. Contact departmental office for site location. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Senn, Number of students: 1.

To increase diagnostic management for advocacy skills for children, adolescents, and young adults with developmental disabilities. Opportunity for fourth-year medical students with interest in developmental disabilities. Clinical experiences include approaches to children with Down's syndrome, spina bifida, extreme prematurity, limb disorders, birth defects, cerebral palsy, mental retardation, acquired brain injury, learning and behavior disorders.

Developmental assessment tools for gross and fine motor skills, receptive and expressive language, problem solving, and functional independence will be emphasized. Formulation of developmental diagnosis including determination of genetic and neurologic etiologies will be stressed as well as prioritization of management skills for habilitation, family counseling, and developmental-educational interventions.

Presentation of a clinical topic or review of a clinical management area will be required. Consultation for children in hospital, school, and rehabilitational therapy settings will take place. In addition, opportunities for participation in community outreach efforts include observations at ARC-Heritage, Center for the Handicapped, OLV, New York State School for the Blind, and Bornhava.

By participating in this elective, medical students will better understand the need to combine health, rehabilitation, and advocacy approaches to optimize the outcomes of individuals with disabilities.

PED-804 PEDIATRIC CARDIOLOGY 4 credits. Modules B-L. Contact departmental office for site location. Prerequisites- Senior medical student, strong consideration of pediatrics as a career goal. Drs. Pieroni, Gingell, Roland, Orié and Leonard. Number of students: 1.

The goals of this rotation are to provide a general appreciation for the scope of pediatric cardiology ranging from the critically ill newborn to the office detection of the functional murmur.

The students will participate in the evaluation of patients in ambulatory and in-hospital settings. They will be exposed to both bedside and noninvasive diagnostic techniques including electrocardiography, echocardiography and Doppler flow. The correlation of the physical findings with hemodynamic and angiographic data and the formulation of a management plan will be demonstrated at the catheterization case conference. Clinicopathologic correlations are discussed at regularly scheduled pathology conferences.

This rotation should provide students with substantial gains in the skills of pediatric physical diagnosis. In addition, familiarity with the noninvasive laboratory techniques, the developmental physiology of infancy, hemodynamic and angiographic diagnosis of cardiovascular disease should be acquired on the completion of this elective. Students are excused from on-call responsibilities.

PED-805 ALLERGY-CLINICAL IMMUNOLOGY 4 credits. Modules D-L. Contact departmental office for site location.

Prerequisites-Senior medical student or permission of OME and instructor. Drs Ballow, Schwartz, Ramesh, Hennon and Lehman. Number of students: 1.

The purpose of this rotation is to give students an opportunity to learn about the diagnosis and management of both inpatients and outpatients with allergic, immunologic and rheumatologic diseases. Particular attention will be devoted to common allergic diseases, asthma and allergies, allergic rhinitis, atopic dermatitis, urticaria and angioedema, hymenoptera sensitivity, food and drug reactions, immune deficiency, and pediatric autoimmune diseases. The students will attend three pediatric allergy/immunology clinics each week (Tuesday AM and PM, Friday AM), and one adult allergy clinic each week (Monday AM). They will also attend weekly didactic sessions, journal club, and research seminars (Thursday AM). Upon completion of this rotation, students will have learned how to take an appropriately detailed history regarding allergic and immunological diseases, to perform appropriate physical examinations, and to perform skin tests and pulmonary function testing. History, physical, and laboratory information should provide an adequate diagnosis and interpretation of the patient's problem and establish an appropriate program of environmental control, pharmacotherapy, and possible immunotherapy with allergic diseases, and replacement immunoglobulin therapy in patients with immunodeficiency disorders.

The students will also attend three pediatric rheumatology clinics per week (Monday, Wednesday and Friday PM). This portion of the rotation will give students an opportunity to learn the evaluation, diagnosis and management of outpatients with pediatric rheumatologic diseases. Common conditions seen in the outpatient setting include juvenile idiopathic arthritis, systemic lupus erythematosus, juvenile dermatomyositis, Raynauds disease, and recurrent fevers. Common referrals include positive ANA antibody, joint pain or muscle pain of unknown etiology, rashes or fevers, and elevated inflammatory markers. The goals of this rotation include taking a detailed history pertinent to a patient with an autoimmune disease. In addition the student will learn a thorough joint exam, and how to assess for the presence of arthritis. Should the occasion arise during the rotation, the student may observe an intraarticular joint injection in the clinic setting. It will be expected that the student perform an accurate and thorough history and exam, and additionally they will be asked to provide input on the possible diagnosis, workup and management.

PED-808 CLINICAL PEDIATRIC NEPHROLOGY 4 credits. Modules B-L. Contact departmental office for site location.

Prerequisite-Senior medical students or by permission of OME and instructor. Drs.Springate, and Waz. Number of students: 2.

This rotation is designed to enhance the student's understanding of etiology and pathophysiology of renal diseases in infants and children including fluid and electrolyte disorders, hypertension, glomerulonephritis, nephrotic syndrome and renal failure.

Students will learn to recognize the major signs and symptoms associated with childhood kidney disorders and participate in formulating management plans including dialysis and renal transplantation in both inpatient and outpatient settings.

During this elective, we expect that students will (1) be thoroughly familiar with assigned patients including an understanding of the pathophysiology of their disease processes; (2) achieve proficiency in performing urinalyses and interpreting laboratory studies of renal function; (3) meet with each of the faculty for tutorial sessions; and (4) give a brief (20-30 minute) presentation on a nephrology-related topic of interest to the student.

PED-810 PEDIATRIC EMERGENCY MEDICINE 4 credits. Modules B-L. Contact departmental office for site location.

Prerequisites-Senior medical students or permission by OME and instructor. Drs. Mazur and Lawrence. Number of students: 1.

The purpose of this course is to give the student an opportunity to learn about the diagnosis and management of pediatric emergencies. The student will gain an understanding of the relationship between medical, surgical, and intensive care expertise necessary for the management of the pediatric emergency patient. Students will gain expertise with a wide variety of pediatric emergencies including trauma, toxicology, resuscitation, dehydration, acute respiratory disease, and others. Experience with common nonemergent acute pediatric illnesses and injuries will be given. Exposure to the prehospital care system and the Poison Control Center can be arranged.

Most of the student's experience will be gained by acting as the primary physician for patients in the Pediatric Emergency Department as part of the patient care team, along with residents, fellows, and faculty. Students may also spend time in the prehospital care environment, becoming acquainted with both ground and air transport, and in the Western New York Regional Poison Control Center. Lectures and small-group discussion will be offered to the senior student on an ongoing basis by faculty and fellows of the Division of Emergency Medicine, including child abuse, dehydration, trauma, toxicology, bacteremia, otitis media, status asthmaticus, status epilepticus, prehospital care, upper airway obstruction, and resuscitation. *Pediatric Emergency Medicine*, Williams and Williams, S. Ludwig, et al., editors, 1993, will be the primary course textbook and will be made available to the students in the Emergency Department.

By the end of the course, the student will have gained an ability to assess and manage (both cognitive and procedural skills) pediatric emergency patients.

PED-814 PEDIATRIC HEMATOLOGY-ONCOLOGY 4 credits. Modules B-L. Contact departmental office for site location.

Prerequisite-Senior medical student or permission of OME and instructor. Drs. Brecher, Higman, Ambrusko, Petruzzi, Bambach and Fitzpatrick. Number of students: 2.

The objective of this rotation is to give the students an opportunity to learn about the diagnosis and management of common hematological and oncological disorders in children, to interpret blood smears, and to have a practical experience in evaluating other frequently used hematology laboratory procedures.

Students will participate in daily ward rounds with the hematologist/oncologist and attend the hematology/oncology clinics. They will participate in the care of patients on the Hematology/Oncology Service, as well as evaluate patients seen in consultation. The diagnosis and management of these patients will be discussed with the attending hematologist/oncologist. They will also review blood smears and specialized laboratory tests with staff attendings and laboratory managers.

Following completion of the rotation, the students should be able to approach a hematological problem logically and to perform a hematologically oriented history and physical examination. They should be able to examine a blood smear methodically and diagnose morphological abnormalities and to interpret the most common clotting abnormalities on the basis of laboratory results. The student should also understand the basic mechanisms behind common laboratory procedures related to blood banking, special hematology, coagulation, hemoglobinopathies, and neutrophil functions and their application to clinical hematology, and understand the multisystem impact of hematological/oncological disorders such as sickle cell disease, hemophilia, and leukemia.

PED-816 GENETICS AND DYSMORPHOLOGY 4 credits. Modules B-L. Contact departmental office for site location. Prerequisite-

Senior medical student or permission of OME and instructor. Drs. Erbe, Robinson, Sadler and Vladutiu; Ms. Janes, Stevens, and Verdaasdonk. Number of students: 1.

The goal of this course is to provide an opportunity for students to learn how the principles of human genetics relate to the diagnosis, management, and genetic counseling of individuals and families directly and indirectly affected by genetic disorders.

Students will participate in the evaluation, care, and genetic counseling of outpatients and inpatients in the Departments of Pediatrics and Gynecology-Obstetrics at Children's Hospital as well as in satellite facilities and other hospitals. Patients encountered during a typical month have a variety of disorders such as inborn errors of metabolism, congenital malformations, chromosomal abnormalities, and other genetic disorders. A course syllabus is provided listing the schedule of required and elective activities, background information, selected reprints and a reading list. Ancillary experience is available in: (a) our diagnostic laboratories (namely, cytogenetics, biochemical genetics and DNA/molecular genetics); (b) in hospital clinics specializing in various specific genetic disorders; and (c) in research projects directed by members of the staff. In view of the unity of genetics as both a basic science and clinical discipline, this course provides an especially good opportunity to integrate basic science knowledge with clinical skills.

At the end of the course, students should be able to evaluate a genetic concern (e.g., fetal exposure to a possible teratogen or positive family history) or a patient with a disorder that may be genetic by means of appropriate use of the genetic literature and those aspects of the history, physical examination, and laboratory testing most relevant to modern medical genetics. Moreover, students will have gained more insight into the emotional and societal implications of genetic disorders.

PED-818 SUBINTERNSHIP IN PEDIATRIC INTENSIVE CARE UNIT 4 credits. Modules B-L. Contact departmental office for availability and site location. Prerequisite-Senior medical student. Drs. Fuhrman, Hernan. Number of students: 1.

The purpose of this rotation is to familiarize the student with the recognition and management of a variety of acute problems that present in the pediatric ICU patient.

The student will make initial evaluations of selected patients in the ICU, which will include the history, thorough chart review, physical examination, and discussion with the pediatric attending. He or she will follow these patients daily through their ICU course and be involved in bedside discussions of the pertinent clinical issues. When on call, the student will remain in the Intensive Care Unit overnight.

On completion of this rotation, the student should have developed sufficient diagnostic and management skills to be able to participate in the care of pediatric ICU patients.

PED-819 PEDIATRIC ENDOCRINOLOGY AND DIABETES 4 credits. Modules B-L. Contact departmental office for site location. Prerequisites-Senior medical student or permission of OME and instructor. Drs. Buchlis, Gartner, Quattrin, Mastrandrea, Fournier and Bethin. Number of students: 1.

The objectives of this rotation are to give the students a broad experience in clinical pediatric endocrinology and diabetes and to teach them the requisite skills of history taking and physical examination pertaining to this specialty.

Students will participate in the care of patients seen in the two endocrine clinics and two diabetes clinics held each week. In addition to the ambulatory care of children with diabetes mellitus, the student will gain experience in a broad spectrum of endocrine problems which include growth disorders, thyroid problems, gonadal and adrenal disease. Approximately 40 to 50 ambulatory endocrine patients and 20 to 30 diabetic patients are seen each week. A preclinic chart review is held once weekly with the staff of the Division of Endocrinology. Students will be responsible for assisting in the diagnostic and therapeutic care of all patients admitted by the Endocrine staff in addition to other hospitalized children for whom an endocrine consultation is requested. They will be provided with a bibliography of pertinent references and be assigned additional literature references, depending on the clinical problem. Students will attend clinical conferences and endocrine journal club, which are held weekly.

Upon completion of this rotation, students should have a thorough understanding of the relationship between pathophysiologic mechanisms and the endocrine disorders which are commonly seen in childhood. These include hypopituitarism, thyroid dysfunction, ambiguous genitalia, early and late sexual maturation, adrenal and gonadal disorders. They also should understand the pathophysiology of insulin-dependent diabetes mellitus and its complications as well as treatment of the disease.

PED-820 AMBULATORY PRECEPTORSHIP IN GENERAL PEDIATRICS 4 credits. Modules B-L. Contact departmental office for site location. Prerequisite-Senior medical student or permission of OME and instructor. Students will be assigned to one of several primary care pediatric settings. Students with special requests should submit them in writing to the course coordinator, Dr. Waz. Number of students: 5.

The goals of this rotation are to provide the students with exposure to the setting of a private pediatric practice and firsthand experience in providing primary care to pediatric patients.

The student will see well and sick pediatric patients under the direct supervision of a pediatric preceptor. The amount of student responsibility will at least include independently performing histories, physical examinations, and forming assessments of patients seen. The student may make hospital rounds with the pediatric preceptor and will have the opportunity to observe the various functional aspects of a private pediatric practice, e.g., telephone contacts, appointment schedules, the use of consultations, social agencies, etc.

With this rotation, students should gain a greater facility in working with parents and children in the ongoing process of providing care for well and sick children and adolescents. Students should gain some appreciation of the ways in which pediatricians serve patients and the community.

PED-825 SUBINTERNSHIP IN NEONATOLOGY 4 credits. Modules B-L. Contact departmental office for availability and site location. Prerequisite: Senior medical student. Dr. Ryan and Neonatology attending staff. Number of students: 1.

The goal of the course is to introduce the student to the principles of newborn health care through a structured clinical experience as a subintern in the regional neonatal intensive care unit at the Children's Hospital.

The student, under constant supervision of Neonatology faculty and fellows, and senior pediatric residents, will function as the primary house staff assigned to a limited number of newborn patients admitted to the NICU. The student will participate in a team approach to the evaluation, diagnostic and therapeutic interventions of new admissions and with the team develop a differential diagnosis and plan of care. Continuing care of these high-risk neonatal patients will include ongoing assessments, nutritional, diagnostic and therapeutic management, discharge planning, communication with parents, consulting and primary care physicians and the entire neonatal health care team. The student will participate in daily attending teaching rounds and attend high-risk deliveries. The subintern will also attend the monthly perinatology, neonatal pathology and neonatal ethics conferences. It is anticipated that the subintern will take call with a neonatal fellow and resident or nurse practitioner every fourth night during the rotation.

The student will become proficient in physical examinations of premature and term high-risk infants and become knowledgeable of the clinical presentation and pathophysiology of common neonatal diseases. A major emphasis is for the student to be able to apply principles of critical care, including drug therapy, nutrition support, fluid and electrolyte therapy and respiratory support, in a team setting. Special skills such as neonatal resuscitation, endotracheal intubation and umbilical vessel catheterization will be acquired as available experiences permit.

PED-828 NUTRITION/GASTROENTEROLOGY 4 credits. Modules B-L. Contact departmental office for site location. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Baker. Number of students: 1.

The objective of this rotation is to provide the student with an opportunity to evaluate gastroenterologic problems in the pediatric age group, including specific diseases such as inflammatory bowel disease, brush border enzyme deficiencies, celiac disease, cystic fibrosis, neonatal hepatitis and chronic liver disease.

During this time, students will participate in consultation of patients in the Children's Hospital of Buffalo and in two outpatient clinic sessions per week. The students will have the opportunity to observe diagnostic procedures like liver and jejunal biopsies, colonoscopies and esphagogastroduodenoscopies. The student will be introduced to pediatric problems requiring nutrition support and to the methods of delivering this sort of therapy. Students will participate in the weekly conference schedule including pathology conference, radiology conference and two clinical teaching conferences. They will be exposed to research in the field, to conventional treatment modalities as well as to those on the horizon.

PED-830 PEDIATRIC GASTROINTESTINAL RESEARCH 4 credits. Modules B-L. Contact departmental office for site location. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Baker. Number of students: 1.

This rotation is designed for the research-orientated student. The emphasis is on the development, in health and disease, of hepatic, pancreatic and gastrointestinal function during infancy and childhood.

The students will observe and participate in the care of premature and full-term infants, and children referred for evaluation of range of gastrointestinal diseases including abnormal synthetic metabolic function, malabsorption and dysmotility. Students will be exposed to the methods of treatment for these abnormal conditions. The students will also learn about the modalities of nutrition support including specialized formulas, enteral feeds and intravenous nutrition. The students will have the opportunity to participate in one of several clinical research studies as well as observe and participate in laboratory-based research. It is mandatory that the student present a seminar with complete reference list, on a subject decided upon by the student and the tutor. The topic of this seminar should be determined at the beginning of the rotation.

At the end of this rotation, students should be familiar with the major research issues in pediatric gastroenterology. The students should have learned some of the research methods being used to answer these issues.

PED-831 PEDIATRIC INFECTIOUS DISEASES 4 credits. Modules B-L. Contact departmental office for site location. Prerequisite: Senior medical student or permission of OME and instructor; Drs. Faden, Ogra and Welliver. Number of students: 2.

The purpose of the rotation in Pediatric Infectious Diseases is to provide an opportunity for students to gain a greater understanding of infectious diseases that occur in children.

The students will participate as members of the consulting team composed of an attending physician and a resident in Pediatrics. The major portion of teaching will emanate from daily rounds. With prior arrangements, this rotation can be tailored to the specific needs and desires of each student. For example, the students may elect to spend the entire time period in the laboratory, either assisting with ongoing research or initiating their own project.

Upon completion of the rotation, the students should be able to recognize and manage many of the infectious problems of children. They will also be better able to interpret laboratory studies that specifically pertain to infectious diseases.

PED-834 PEDIATRIC PULMONARY DISEASE 4 credits. Modules B-L. Contact departmental office for site location. Prerequisite: Senior medical student or permission of OME and instructor. Drs. Borowitz, Sharp, and Sheehan. Number of students: 1.

This rotation is designed to improve the student's skills in the diagnosis, treatment, and follow-up of infants and children with acute and chronic pulmonary disease. Particular emphasis will be given to the physiological basis of pulmonary disease and modern diagnostic techniques.

Regular rounds will be made and the patients' problems will be discussed in clinical settings and conferences. In addition, several teaching conferences in radiology, clinical science, and physiology complement the clinical experience. Students who spend four weeks on the service will have an opportunity to learn the performance and interpretation of standard pulmonary tests.

Upon completion of the rotation, students should be able to evaluate a pediatric patient with an acute or chronic pulmonary problem, arrive at a provisional diagnosis, initiate therapy, work out a plan of investigation, and establish a specific diagnosis and long-term plan of management. Students who spend four weeks will also develop skills in the performance and interpretation of pulmonary function tests.

PED-836 CLERKSHIP IN CHILD PSYCHIATRY-CLINICAL CHILD PSYCHIATRY 4 credits. Modules C-L. Contact departmental office for site location. Prerequisites: Senior medical student or permission of OME and instructor. Dr. David Kaye. Number of students: 1 (registered under PTY-820).

Please see PTY-820.

PED-890-0 COURSE AT OTHER UNIVERSITY 4 credits. Modules B-L. Contact departmental office for site location. Prerequisites: Senior medical student-. Prior permission for this elective must be obtained from the director of the medical student program in Pediatrics.

The goal of this rotation is to give students an opportunity to take an elective in Pediatrics at a university of their choosing, to either study a pediatric subspecialty area that is not available in Buffalo or to participate in a department that they are considering for pediatric residency training. Students are encouraged to discuss plans for out-of-town electives with members of the Pediatric faculty.

PED-950 RESEARCH IN PEDIATRICS 4 credits. Modules B-L. Contact departmental office for site location. Prerequisites: Senior medical student or permission of OME and instructor. Number of students: 4.

The objectives of the course are to give fourth-year students an opportunity to participate in an ongoing research program or perhaps initiate a research project of their own to be completed during the academic year. Any student who would like advice as to which faculty member to seek out for a particular project should contact the Division of Pediatric Medical Education (878-7355).

Students' research experiences will vary according to the faculty mentor chosen. A spectrum of experiences ranging from laboratory-bench research to patient-centered prospective or retrospective studies are offered.

During the elective, students should acquire knowledge about the planning of a research project, the acquisition of data, the analysis of the data, the preparation of the findings for publication, and the appreciation of ethical issues in biomedical research. Because of the short time allotment, it is essential that students meet with faculty mentors to organize this rotation in advance.

DEPARTMENT OF PHARMACOLOGY AND TOXICOLOGY

Pharmacology is the study of the effects and the mechanisms of action of drugs. The scope of pharmacology ranges from the basic mechanisms of where and how drugs act to the applications of drugs in the diagnosis, prevention and treatment of human diseases. Toxicology, and the pharmacology of drug abuse, deals with the harmful effects of agents to which individuals or groups of the population are exposed.

The study of pharmacology stresses the ways in which drugs modify physiological and biochemical processes in health and disease. In the new integrated medical school curriculum lectures and case studies, presented throughout the various organ system modules, cover the major classes of drugs and illustrate, with specific examples, the general principles underlying the rational use of drugs in the diagnosis, prevention, and especially, treatment of disease. They also provide insight into the strategies and tactics used in the prevention, diagnosis, and treatment of both acute and chronic intoxication.

The Department of Pharmacology and Toxicology participates in the small-group problem-based learning activities for first- and second-year medical students. For students in the third and fourth years, the Department of Pharmacology and Toxicology participates with clinical departments in conferences on rational therapy.

The department offers an extensive program of formal and informal courses through the Division of Graduate and Professional Education. Consult the Graduate School Bulletin for a complete listing and description of graduate courses, which are open to medical students. A description of the elective courses in pharmacology and toxicology for medical students appears below.

Research Opportunities

Specialized areas of research interest within the department are: (1) neuroscience, including central and peripheral neurotransmission, drug effects on electrophysiological processes, nerve growth factors, neural cytoskeletal elements, study of psychoactive drugs, behavioral pharmacology, and pharmacology of abused drugs; (2) cellular and molecular pharmacology, including drug-receptor interactions, signal transduction, drug-enzyme interactions, protein phosphorylation, pharmacology of antibiotics, hormone secretion, immunopharmacology, and gene expression; (3) toxicology, including environmental and clinical aspects, metabolism of dioxins and halogenated hydrocarbons, toxicology of heavy metals and other environmental pollutants, development of antidotes, and immunotoxicology.

PMY-601 HONORS PHARMACOLOGY *2 credits, spring semester. Prerequisite: IMC 602: The Human Cardiovascular System. Course Director: Alan Reynard, Ph.D. Number of students: open. Thursdays 3:00 - 5:00*

Honors Pharmacology is offered to second-year, second-semester medical students and is to provide them with an enrichment of the pharmacology that they have learned in the preceding three semesters. It covers most of the major drug classes. The format is lecture by a medical practitioner about the management of clinical conditions with an emphasis on the science that provides the basis for each drug. In each session a series of cases will be presented. the cases will be used to spin off a discussion of the drugs used in the treatment.

PMY-650-0 PHARMACOLOGY RESEARCH *1-4 credits, fall, spring and summer semesters. Prerequisites/First- or second-year medical student and permission of instructor. Staff. Number of students: open.*

Original investigation of a suitable research problem to be chosen according to the interest of the student under the supervision of the staff of the department. Descriptions of current research activities are available in 102 Farber Hall.

PMY-950-0 PHARMACOLOGY RESEARCH *4 credits, Modules D-L. Prerequisite: Senior medical student or permission of OME and instructor. Staff. Number of students: unlimited..*

Original investigation of a suitable research problem to be chosen according to the interest of the student under the supervision of the staff of the department. Faculty and topics are available in the departmental office and the OME.

DEPARTMENT OF PHYSIOLOGY AND BIOPHYSICS

Research in Biophysics

Biophysical sciences are a group of subdisciplines in the biological sciences which apply the principles of physics, physical chemistry, and mathematics to the study of biological systems. Biophysical sciences encompass experimental biophysics, theoretical biophysics, and clinical biophysics.

Experimental biophysics is best known for its contributions to structural molecular biology (through X-ray and neutron diffraction, nuclear magnetic resonance, and other spectroscopic techniques), to the understanding of subcellular structure and subcellular material transport processes-biological membranes in particular (e.g., through electron microscopy and isotopic tracer methodology), and to the elucidation of the nature of biological sensors (e.g., visual or auditory receptors) and of electrochemical information transfer.

Theoretical biophysics includes a diversity of areas which provide a theoretical background to experimental biophysics. These range from thermodynamics (which are characteristic of living systems), stochastic kinetics (pertinent to detailed enzyme kinetics), modeling of biological systems (e.g., compartmental analysis and regulation and control theory of endocrine systems, communication and network theories of the nerve system), to quantum biochemistry and the theory of evolution of the genetic code.

Clinical biophysics comprises the physicochemical background for the development of different physical procedures and devices used for clinical diagnosis (e.g., X-ray and ultrasonic imaging, thermography, magnetic resonance imaging, electrocardiography, blood flow-rate measurement, or isotopic tracer methodologies). It also covers the background for physical techniques used in therapy (e.g., radiation therapy, laser surgery, extracorporeal electrical stimulation, controlled drug release devices) and quantitative analytical approaches to clinical situations (e.g., cost/benefit and decision analysis in clinical diagnosis). Clinical biophysics is also involved in the application of computers and miniprocessors in clinical procedures to the handling and interpretation of clinical analytical information, to the direct diagnosis of certain disorders, and to real time therapeutic feedback control systems.

The Department conducts active research in most of the areas cited and offers appropriate specialized courses in practically all of them. Graduate programs leading to either an M.S. or Ph.D. degree in Biophysical Sciences or combined M.D.-Ph.D. degrees are offered. They are described in the Graduate School Bulletin.

Courses in Biophysics

BPH-505 BIOPHYSICAL BASICS: PROCESSES 4 credits; spring semester. Dual-listed as BPH-405. Dr. Ohki and staff.

Number of students: 15.

First semester of a two-semester sequence. This course is concerned with the fundamental physical and physicochemical treatment of various kinetic processes underlying the normal function of biological systems.

Topics include: non-equilibrium processes, thermodynamics and statistical mechanics, osmotic and hydrostatic forces, membrane permeation and potentials, the mechanisms of excitability, and particularly on the topics of membrane transport pertaining to various membrane proteins, including ion channel proteins.

BPH-510 MODELING AND SYSTEMS THEORY BIOPHYSICS 3 credits; spring semester. Dr. F. Qin and staff. *Number of students: 20.*

Second semester of a two-semester sequence. This course is concerned with the more complex, occasionally larger-scale, examples of processes in biology.

Topics include: Fourier analysis as a descriptive tool, control theory in biology, fluctuations and noise analysis, the interaction of photons with biological systems, spectroscopy, and imaging in biomedicine.

BPH-600 INDEPENDENT STUDY 1-3 credits, fall and spring semesters. Staff.

This course is tutorial in nature and is designed to meet the needs of the students. Thus, the goals, objectives, and expectations vary depending on the students.

BPH-601/602 BIOPHYSICS SEMINAR 1 credit, fall and spring semesters. Prerequisite-Permission of instructor. Drs. Vaidhyanathan, Srikrishnan and staff. Number of students: 15-30.

This course is intended to enhance graduate student appreciation of the scope of the biophysical sciences. A weekly seminar series is held on topics of current interest in a diversity of areas of biophysics. Seminars are presented by University at Buffalo faculty and prominent scientists from throughout the nation.

The student is expected to become familiar with the experimental protocols and current issues in biophysics.

Research in Physiology

Departmental research and graduate training interests in Physiology can be grouped into the areas listed below. These are not mutually exclusive; faculty members' interests often cross these rather arbitrary divisions. Graduate programs leading to either an M.A. or Ph.D. degree in Physiology or combined M.D.-Ph.D. degrees are offered. They are described in the Graduate School Bulletin.

- (1) *Neurobiology*: Cytoskeletal involvement in packaging and transport of organelles in neurons and local protein synthesis in axons; Development of synaptic connections and the role of functional activity in formation and stability of connections; electrophysiological, behavioral, and anatomical analysis of visual information processing at cerebral cortical and subcortical levels in anesthetized and awake monkeys; Retinal physiology and synaptic neuroscience; Elucidation of the role of cell signaling molecules in the modulation of electrical properties of cells in the prefrontal cortex and basal ganglia; Elucidation of the mechanisms of neurodegenerative disorders using disease models in transgenic animals and *Drosophila*.
- (2) *Gastrointestinal Physiology*: Regulation of ion channels in intestinal epithelial cell membranes.
- (3) *Pulmonary Physiology*: Alveolar gas exchange, tissue respiration, permeability of the lung to solutes and water, neural control of breathing, gas mixing in the lung, diffusion in the gas phase, liquid breathing, responses of the gas transport system to hypoxia, control of smooth muscle tone in pulmonary blood vessels and airways. Study of artificial blood substitutes.
- (4) *Cardiovascular Physiology*: Dynamics of regulation of central and peripheral circulation, neural control of the circulatory system, electrical and mechanical activity of single cardiac cells, coronary blood flow, control of blood volume, regulation of cerebral blood flow, neurophysiology of cardiovascular mechano-receptors; Study of cardiac potassium channel function and localization using patch clamp and molecular biology techniques; Study of redox modulation of calcium and potassium channels; Study of stretch activated channels; Modeling of cardiac electrical activity.
- (5) *Exercise Physiology*: Transient and steady-state responses of the cardiovascular system to terrestrial and aquatic exercise in man and animals.
- (6) *Environmental Physiology*: Physiological and pathophysiological effects of unusual physical environments on cardiovascular, respiratory, and cellular functions. Includes effects of high pressure and immersion as in diving, low pressure and high and low gravitational forces as in flying and space travel, and temperature extremes. Studies are performed in human subjects, animals, and cellular systems. Associated areas of interest are protective gear and man/equipment interactions.

Courses in Physiology

PGY-503 ADVANCED TOPICS: PHYSIOLOGY OF AGING 3 credits; spring semester. Offered alternate years. Cross-listed as ES 555. Prerequisites--Undergraduate courses in anatomy and physiology, or consent of instructor. Course coordinators: Drs. Krasney/Gosselin and staff. Number of students: 50.

This lecture format graduate course will meet twice/week for 1 hour and 20 minutes. Three written exams (two hourly and a final) will be given for a total of 100% of the final grade.

The objectives of this course are to discuss the changes in the biological processes of various organ systems with the passage of time that result in an organism's (i.e., humans) decreased ability to adapt to the environment. Although no text is required for the course, selected readings from current literature for each area will be assigned.

Topics include theories of aging, metabolism and body composition, cardiovascular function, respiratory function, muscle function, central and peripheral nervous system, sleep, bone, endocrine function, immune function, kidney function/pharmacokinetics, thermal regulation, gastrointestinal function, exercise and fitness, and reproduction.

PGY-505 CELL AND MEMBRANE PHYSIOLOGY 4 credits; spring semester. Cross-listed as PGY 405 Prerequisites – calculus, cell biology (BIO201, BIO205) or consent of instructor. Course coordinator: Dr. Strauss and staff.. Number of students 8.

Basic principles underlying cell and membrane physiology. Emphasis will be placed on membrane excitability, ion channels and their modulation by cell signaling pathways.

This course addresses contemporary issues of biophysical principles underlying membrane physiology and membrane excitability and their modulation by cell signaling pathways. A corollary goal will be to understand experimental methods used in molecular physiology and biophysics. More specifically, students will be expected to understand the structure and function of different voltage-gated ion channels, different cell signaling cascades and how these different pathways modulate the properties of the different ion channels. Students will also be expected to understand the different approaches used to elucidate channel function, including biophysics, molecular biology, mutagenesis and genetics.

PGY-514 VISION 4 credits; spring semester. Prerequisite-Permission of the course director. Dr. Slaughter. Number of students: 10.

This course is aimed at presenting a broad, interdisciplinary description of current topics in the visual sciences.

This is an introductory, wide-ranging course on vision, encompassing the anatomy, biochemistry, biophysics, and physiology of visual pathways in the retina and brain; the psychological analysis of perception; psychophysics; computer modeling of visual processes; and the engineering concepts underlying machine vision. Each topic is presented by a faculty member with research interests in that area.

Upon completion of this course, the student is expected to be familiar with the basic principles and areas of current interest in many fields of vision and be able to relate observations in one field to information obtained in other disciplines.

PGY-520/521 APPLICATION OF COMPUTERS TO PHYSIOLOGICAL PROBLEMS 4 credits; fall and spring semesters. Prerequisite--Consent of instructor. Dr. Olszowka. Number of students: 30.

The course is designed to give the students experience in data acquisition and analysis.

The students will have hands-on experience writing data acquisition programs using Hewlett-Packard VEE software as well as Excel macros using the Visual Basic language.

PGY-605/606 ADVANCED TOPICS IN CARDIOVASCULAR PHYSIOLOGY 2 credits; fall and spring semesters.

Prerequisites--PGY-502, 551/552 or equivalent, and consent of instructor. Dr. Krasney and staff. Number of students: 20.

The purpose of this course is to provide an opportunity to analyze physiological regulatory processes in selected cardiovascular disease states. Topics for consideration include coronary artery disease, hypertension, congestive heart failure, valvular disorders, and congenital heart disease. The use of exercise as a physiologic stress and as a rehabilitation tool will be discussed.

The course format will involve informal lecture/discussion periods focusing on selected examples of cardiovascular pathophysiology through analysis of basic and clinical hemodynamic data.

At the conclusion of the course, the student should have acquired a broad understanding of cardiovascular mechanisms in health and in disease which will be valuable for an informed approach to cardiovascular medicine and research.

PGY-699 INDEPENDENT STUDY 1-6 credits (variable); by arrangement. Prerequisite--Consent of instructor. Staff. Number of students: 20.

The objective of this course is to give students an opportunity to acquire advanced experience in a specific area of research in physiology, either through original research or library projects.

Students will be exposed to methods of research and data analysis and interpretation in a specific area of physiology.

Students should gain advanced knowledge of a particular area in physiology, learn to analyze and interpret experimental results, and read the scientific literature critically.

DEPARTMENT OF PSYCHIATRY

The Department of Psychiatry teaches courses in behavioral science and psychiatry during three years of medical school. The curriculum consists of participation in Neuroscience and Behavior, The Psychiatry Clerkship and electives during the clinical years. During Neuroscience and Behavior major psychiatric illnesses are taught with an emphasis on their etiologic and clinical presentations.

In the third year, the psychiatric clerkship enables students to expand and integrate psychiatric knowledge within a clinical setting. The clerk gains skills in psychiatric assessment, interviewing, comprehensive treatment planning, psychotherapy, and use of psychotropic drugs. During the clerkship, students gain experience treating patients with psychiatric difficulties in in-patient and out-patient settings.

Electives are offered in a wide variety of subjects, and provide students with intensive experience in selected areas of psychiatry. Fourth year electives enable students to select clinical and research experiences tailored to their particular interests.

The Department of Psychiatry draws upon the clinical facilities of many area hospitals and the expertise of its full-time and volunteer faculty to offer students a breadth of learning experiences.

NOTE: Contact departmental office for site location before registering. Medical students are only allowed to work 80 hours/wk.

PTY-502-0 TUTORIAL IN PSYCHIATRY *Variable credit;- 8 weeks; fall and spring semesters. Staff.*

Tutorials are designed to accommodate student interests beyond the basic courses in psychiatry and may include such topics as psychodiagnosis, interviewing, biological psychiatry, and psychodynamic psychiatry. Students will be assigned a faculty mentor, who, together with the student, will establish the goals and assignments for the tutorial.

***PTY-700 PSYCHIATRIC CLINICAL CLERKSHIP** *6 credits. Blocks 1-4. Contact departmental office for site location. Prerequisite-Junior medical student. Dr. Linda Pessar and staff.*

The objectives of this clerkship are to introduce medical students to clinical psychiatry and enable them to acquire knowledge and skills through clinical experiences under faculty guidance.

Students will be assigned to Psychiatric Units at one of the area hospitals. They will be given responsibility for direct patient care under the supervision of attending psychiatrists and staff. In addition, they will gain experience in emergency psychiatry through night and weekend rotations at the CPEP at Erie County Medical Center. This six-week program includes lectures, seminars, and conferences on a variety of psychiatric subjects.

On the first day of each rotation students will receive an orientation to psychiatry and written material pertinent to the course, including lists of objectives and a bibliography of required and suggested readings. At the end of the course, a multiple-choice written examination will be given.

Upon completion of the clerkship, the students should be competent to evaluate and manage patients with major mental illness, should be able to interview patients skillfully, possess basic knowledge of psychopharmacology, be familiar with common problems at the psychiatric-medical interface, and be able to assess psychiatric emergencies.

PTY-800 SUBINTERNSHIP IN GENERAL PSYCHIATRY *4 credits. Modules B-L. Contact departmental office for site location. Prerequisite: Senior medical student. PTY-700. Dr.Linda Pessar and staff. Number of students: 2.*

This rotation is offered to give students a variety of clinical experiences at Psychiatric Units of affiliated hospitals. It will involve direct patient care under the supervision of attending psychiatrists and residents and close teamwork with multidisciplinary staff. They will participate in all the clinical rounds of the floor and grand rounds of our department.

Upon successful completion of this rotation, students should show competency in the following areas: performing psychiatric assessment and formulating a diagnosis and treatment plan, prescribing common psychotropic drugs and drug combinations, conducting supportive psychotherapy working in collaboration with a mental health team and community resources.

PTY-801 CONSULTATION -- LIASON PSYCHIATRY *4 credits. Modules C-L. Contact departmental office for site location. Prerequisite: Senior medical student or permission of OME and instructor. Dr .Raphael Leo (898-4857). Number of students: 1.*

Patients often present to their physician with psychiatric illness or emotional problems complicating their physical condition. The objectives of this course are to familiarize students with management of these patients and to help improve their sensitivity and diagnostic/treatment skills, regardless of practice specialty.

Upon completion, the student should be able to differentiate medical mimics of psychiatric illness, recognize the emotional and the physical components of a patient's condition, be familiar with the emotional reactions to physical illness and role of personality on this reaction, and develop and implement an appropriate treatment plan.

PTY-802 OUTPATIENT PSYCHIATRY 4 credits. Modules D-L. *ECMC Outpatient Psychiatry. Prerequisites: Senior medical student and completion of PTY 700. Dr. S.K. Park and Dr. Marcelle Mostert. Number of students: 2.*

The objectives of this rotation is to provide students with a more in-depth understanding of psychopathology and increased skill in evaluating and treating patients with a variety of psychiatric diagnoses in various outpatient settings.

This rotation includes time spent in individual sessions, groups, walk-in medication clinic, bipolar clinic, weekly case conference, grand rounds. In addition, there is flexibility in the rotation to include exposure to areas of special interest, including forensics, ACT team research and community mental health. Upon successful completion, students will have improved knowledge and skills in the following areas: (1) evaluating psychiatric patients with appropriate disposition; (2) the outpatient diagnostic interview; (3) psychopathology; (4) psychopharmacological therapy; (5) psychotherapy: individual and group

PTY-810 EMERGENCY PSYCHIATRY 4 credits. Modules C-L. *Contact departmental office for site location. Prerequisite: Senior medical student or permission of OME and instructor. Dr. John Improta and staff. Number of students: 1.*

The objectives of this rotation are to teach students the clinical evaluation of patients in crisis, assessment of patients at risk for violence against self or others, and techniques of crisis interventions.

The student will evaluate patients who come to the Comprehensive Psychiatric Emergency Program at ECMC. The student's patient assessment and disposition will be reviewed by an attending psychiatrist. When appropriate, the student will follow patients for crisis intervention.

With successful completion of the course, the student should be able to assess patients in psychiatric crisis in terms of psychiatric diagnosis and contributing psychosocial stressors, assess violence potential, and form late treatment planning. In addition, the student will have mastered basic techniques of crisis intervention.

PTY-820 CLERKSHIP IN CHILD PSYCHIATRY-CLINICAL CHILD PSYCHIATRY 4 credits. Modules C-L. *Contact departmental office for site location. Prerequisites: Senior medical student, completion of PTY 700. Dr. David Kaye. Number of students: 1.*

The goal of this month is to familiarize students with what a child and adolescent psychiatrist does. This rotation provides a broad exposure to multiple child psychiatric settings.

The core experience involves the student as a participant-observer in a wide variety of in- and out-patient settings, including Children's Hospital, Division of Child and Adolescent Psychiatry (Outpatient Clinic and consult service), Western New York Children's Psychiatric Center, Erie County Medical Center (Adolescent Psychiatric Unit), Renaissance House (substance abuse), and multiple community sites. Students have the opportunity to work with all core faculty in the Division, while seeing a wide variety of patients and families as well as treatment modalities. The month can be tailored to accommodate specific interests of individual students. This should be discussed with Dr. Kaye prior to beginning the rotation. The clinical contact is augmented by scheduled teaching activities. At the completion of the month the student is expected to write a brief essay on a topic of interest.

Upon completion of the clerkship students will have learned what a clinical child and adolescent psychiatrist does on a day-to-day basis. The student will develop their skill in evaluating children/adolescents and will become familiar with current treatment modalities commonly utilized.

PTY-890 COURSE AT OTHER UNIVERSITY 4 credits. Modules C-L. *Contact departmental office for site location. Prerequisite-Senior medical student. By permission of Dr. Linda Pessar (898-4858) and The Office of Medical Education*

By arrangement with other university and Dr. Linda Pessar, Director of Medical Student Education in Psychiatry.

PTY-950 RESEARCH IN PSYCHIATRY 4 credits. Modules C-L. *Contact departmental office for site location. Course Coordinator -- Dr. Linda Pessar. Number of students: 8.*

The goal is to introduce the student to one or several varieties of basic and clinical research and educational research approaches currently being used by departmental faculty members.

The student's experiences will vary with the specific project and faculty member. In general, the student will become directly involved on a continuing basis in a research project under the supervision of the faculty member. Depending on the project, activities

may include one or more of the following elements: development of the rationale of the research; literature reviews; design of the study; data collection, reduction, and analysis; interpretation of results; preparation of a written report.

Upon completion, the students should have acquired facility in planning, executing, and integrating research relevant to psychiatry. In most cases, this will enable him or her to be a useful junior member of a research team. He or she should also have acquired an appreciation of the conceptual and technical complexity of rigorous research endeavors in areas of concern to psychiatry. Also open to freshman and sophomore medical students.

Interested students should contact Dr. Linda Pessar 898-4866 for further information.

DEPARTMENT OF RADIATION ONCOLOGY

RAO-800 RADIATION ONCOLOGY 4 credits. Modules B-L. Prerequisite: Senior medical student or permission of OME and instructor. Number of students: 2

Fourth year students rotating through Radiation Medicine will be introduced to the principles of radiation physics, radiation biology, and clinical radiation oncology. They will be given exposure to multiple disciplines of oncology including head and neck oncology, thoracic oncology, lymphomas, sarcomas, pediatric malignancies, gastrointestinal cancers, breast cancer, brain tumor, genito-urinary cancers and procedures such as brachytherapy, gamma knife, radiosurgery, and total body irradiation. The student will rotate with different attending physicians and participate in patient evaluation, treatment simulation and planning, and tumor board discussions. The student may be given small assignments and will present a topic to the department. The rotation will be entirely based at Roswell Park Cancer Institute in the Department of Radiation Medicine.

RAO-890 COURSE AT OTHER UNIVERSITY 4 credits. Modules B-L. Prerequisite: Senior medical student. Number of students: 2.

This rotation will allow students to take an elective in Radiation Oncology at a University of their choosing to broaden their experience.

RAO-950 RADIATION ONCOLOGY RESEARCH 4 credits. Modules B-L. Prerequisite: Senior medical student. Number of students: 2.

Students will have the opportunity to participate in an ongoing or independent research project with a faculty member in the Department of Radiation Oncology.

DEPARTMENT OF RADIOLOGY

The curriculum in radiology is wholly elective throughout the third and fourth years. Despite this, increasing numbers of students are enrolled in the various course offerings. It is hoped that the quality of the courses will encourage students to continue to elect some time in radiology.

RGY-800 CLINICAL PRECEPTORSHIP IN DIAGNOSTIC RADIOLOGY *4 credits. Open to third- and fourth-year medical students. Blocks 1a-4c and Modules A-M. Veterans Administration Medical Center: Drs. DelBalso, Cook, and Moudy. Roswell Park Cancer Institute: Dr. Laudico. Number of students: 4.*

The goal of this rotation is to allow students to have firsthand exposure to the practice of diagnostic radiology so they may more intelligently utilize diagnostic imaging for their future careers or, perhaps, be stimulated to enter radiology.

The emphasis is on diagnostic imaging. This elective affords the students an opportunity to acquaint themselves with the biological effects of radiation, radiation protection, the indications and contraindications, and preparations for a wide variety of imaging studies and procedures, which include plain films, computer tomography (CT), ultrasound, and MRI. Emphasis is made on correlating the clinical with the imaging findings. In addition, students are exposed to a variety of interventional and therapeutic procedures, to audiovisual aids, and to teaching files.

Students completing this program should be able to effectively and judiciously use diagnostic radiology services in their future medical practices. Their own ability to recognize and interpret pathology as seen on radiographic examinations will be significantly enhanced.

RGY-890 COURSE AT OTHER UNIVERSITY *4 credits. Modules A-M. Contact departmental office. Prerequisite: Senior medical student. By arrangement with the other university department and Dr. DelBalso. Number of students: 10.*

DEPARTMENT OF SURGERY

The Department of Surgery aims to prepare all students to recognize and manage minor surgical problems, evaluate surgical emergency situations, and understand the presentation and evaluation of the common surgical problems. The experience in the wards, clinics, and operating rooms is designed to allow the learner to master some of the basic clinical skills found in surgery.

The teaching program is carried out in six hospitals. All surgical services are affiliated with the School of Medicine and Biomedical Sciences. On the clinical services the learner follows individual cases and works with the resident and attending staff. In the senior internships, the learner gains more clinical focus and acumen by engaging in an intensive clinical experience. The learner is assigned responsibility commensurate with his or her knowledge and experience.

***SUR-700 SURGERY AND SURGICAL SPECIALTIES CLERKSHIP 8 credits. Blocks 1-4. Prerequisite-Junior medical student.**
Dr. Gregory Cherr, Program Director

The Department of Surgery will prepare all student-learners to recognize and manage minor surgical problems, evaluate surgical emergency situations, and understand the presentation and evaluation of common surgical problems. The educational experience is designed to allow the learner to master the basic clinical skills found in Surgery.

The clinical education program is carried out in six hospitals/ surgical services affiliated with the School of Medicine and Biomedical Sciences. During the Clerkship in the Surgical Sciences, the student-learner will acquire the basic surgical skills required of any physician. He/she will participate in the student-credentialing program and attend a series of conferences that are designed to emphasize the interplay of anatomic, physiologic, and pathologic factors responsible for surgical disease. On the clinical services, the learner follows individual cases and works with the resident and attending staff. The learner is assigned responsibility commensurate with his/her knowledge and experience.

The didactic experience in surgery is 12 weeks in length and the primary responsibility of students during the entire 12- week module is Surgery. The clinical experience in General Surgery is offered for eight weeks total (four weeks each at two separate sites) from the following: BGH, ECMC, VA, Millard Fillmore (Gates), the WCHOB, MF Suburban and RPCI. These are intense inpatient experience with intraoperative experience, ward assignments, ambulatory experience, required night call, student credentialing, and conference attendance. Each site may also have an ambulatory component in which the student learner will participate in the evaluation of patients in the clinic/ office setting. The remaining four weeks may be used for Surgery 800 or for an approved elective. Surgery 700 will take priority over any electives. All students will be required to participate in all mandatory surgical activities for the entire 12-week clerkship. These include orientation, skills lab, didactics, case conferences, grand rounds, the surgical conferences at the hospital to which he/she is assigned, testing sessions and the exit interview. In addition, student-learners are expected to read and master the assigned textbook.

The Department assigns a grade according to the academic status policies of the School of Medicine and Biomedical Sciences. Grades are based on completion of the basic, mandatory components including attendance and presentation at the Student Case Conferences, completion of all credentialing documents, completion of required procedures, attendance at all required conferences, clinical evaluations, and testing.

***SUR-800 SURGICAL SPECIALTIES 4 credits. Blocks 1-4. Prerequisite-Junior or Senior medical student.** *Dr. Gregory Cherr, Program Director*

This module in surgical subspecialties includes experience in both hospital and clinic based surgery. The clerkship is 4 weeks in length and includes 1 week of Anesthesiology, 1 week of Urology and a 2 week rotation on one of the following: Neurosurgery, Orthopedic surgery, Ophthalmology, ENT or Vascular Surgery.

The goal of this experience is to prepare the learner for the practice of medicine by offering an experience in the scientific basis of surgical practice and exposure to a range of surgical specialties. In this course, the learner will increase their working knowledge of the clinical practice of surgery and surgical subspecialties. The learner will be able to apply this knowledge to the patient's complaints and design therapeutic plan.

Direct patient contact is through participation in hospital rounds, clinical practice, office practice and participation in seminars. At the onset of the course, each student is provided with a course syllabus describing the objectives and expectations (Goals Statements). Small numbers of students are assigned to the surgical specialty services. The students are expected to attend the surgical conferences at the hospital to which they are assigned. They are expected to reach and master any assigned texts and handouts.

The Student Evaluation and Education Committee assigns the grade according to the academic status policies of the School of Medicine and Biomedical Sciences. Grades for the clerkship are based on completion of defined goals and clinical evaluations.

SUR-801 SUBINTERNSHIP IN TRAUMATOLOGY 4 credits. Modules B-L. NOTE: An "E" after the module in the Class Schedule indicates the Erie County Medical Center as the site Prerequisite- Surgery 700 Dr. W. Alan Guo Number of students: 1

The goals of the rotation are to give students a fundamental background in the principles of management of the patient suffering major trauma. Students will be assigned to a Trauma Team at the Erie County Medical Center and become an integral part of that patient care team. They will be involved in the examination and care of trauma patients from the time of their admission via the Emergency Room throughout their hospital course to discharge and in-clinic follow-up after discharge. After exposure to this course, students should have acquired the perspective concerning the proper priorities in management of major trauma as well as the interpretation of the evidence from clinical and laboratory findings suggesting the proper course of management. All are integrated into the health care team and serve as subinterns with night call responsibilities.

The Student Evaluation and Education Committee assigns the grade according to the academic status policies of the School of Medicine and Biomedical Sciences. Grades for the clerkship are based on completion of defined goals and clinical evaluations.

SUR-803 SUBINTERNSHIP IN PEDIATRIC SURGERY 4 credits Modules B-L. NOTE: A "C" after the module in the Class Schedule indicates the Women & Children's Hospital of Buffalo as the site Prerequisite-Surgery 700 Dr. Yi-Hong Lee. Number of students: 1 in each module.

The Subinternship in Pediatric Surgery is designed for students who have a career interest in surgery, pediatrics, pediatric surgery or any other pediatric subspecialty. The goal of this internship is to familiarize students with the management of surgical diseases in children. It is offered at the Women & Children's Hospital of Buffalo. Particular emphasis is placed on pediatric trauma, oncology, and abdominal emergencies. Exposure to the care of children will occur in the wards, emergency rooms, operating room, and clinic. All are integrated into the health care team and serve as subinterns with night call responsibilities. All students are required to attend Department of Surgery Grand Rounds and Pediatric Surgery Grand Rounds. Upon completion of this internship the student will have developed a methodologic approach to the diagnosis and treatment of inpatient and outpatient pediatric problems.

The Student Evaluation and Education Committee assigns the grade according to the academic status policies of the School of Medicine and Biomedical Sciences. Grades for the internship are based on completion of defined goals and clinical evaluations.

SUR 805 SUBINTERNSHIP IN VASCULAR SURGERY 4 credits Modules B-L. Prerequisite-Surgery 700. Dr. Harris, Number of students: 2

The goal of the Subinternship in Vascular Surgery is to enable the student to develop a proficiency in the approach to and management of many surgical and medical vascular diseases. This internship is designed for a student who has developed a career interest in vascular diseases including the medical management of vascular disease and general or vascular surgery. You will be assigned to one of the participating hospitals. The student will become competent in interpreting angiograms, performing several diagnostic and therapeutic procedures, and managing patients pre- and postoperatively.

Students will workup new patients, participate in consultations, and under-take procedures. All are integrated into the health care team and serve as subinterns with night call responsibilities. Students will assist during noninvasive diagnostic procedures and operations. The student will actively participate in the vascular laboratory and become familiar with noninvasive vascular diagnostic techniques. All students are required to attend Department of Surgery grand rounds and Thursday vascular conference. Each will participate in night call with the health care team.

Upon completion of the internship, the students will have developed a methodological approach to the diagnosis and treatment of a wide range of vascular diseases. The student will feel confident in interpreting invasive and noninvasive diagnostic procedures, carrying out several diagnostic procedures, and understanding a broad spectrum of operative procedures as well as pre- and postoperative care.

The Student Evaluation and Education Committee assigns the grade according to the academic status policies of the School of Medicine and Biomedical Sciences. Grades for the clerkship are based on completion of defined goals and clinical evaluations.

SUR 807 SUBINTERNSHIP IN BREAST OR HEAD AND NECK SURGICAL ONCOLOGY 4 credits. Modules B-L. Prerequisite- Surgery 700 Dr. Gregory Smith Number of students: 2 (one each in breast and head & neck)

The goal of the Subinternship in Surgical Oncology is to enable the student to develop a proficiency in the approach to and management of Breast or Head and Neck disease. This internship is designed for a student who has developed an interest in breast or head and neck disease. It is offered at the Roswell Park Cancer Institute. The student will become competent in interpreting diagnostic studies, performing several diagnostic and therapeutic procedures, and managing patients pre- and postoperatively. All are integrated into the health care team and serve as subinterns. When feasible students may choose one of two divisions: Breast and Head & Neck Surgery.

Students will work-up new patients, participate in consultations, and undertake procedures. Students will assist during diagnostic procedures and operations. The student will actively participate in various oncology conferences and rounds. Upon completion of the subinternship, the students will have developed a methodological approach to the diagnosis and treatment of a wide range of malignant diseases. The student will feel confident in interpreting diagnostic procedures and understanding a broad spectrum of operative procedures as well as pre- and postoperative care.

The Student Evaluation and Education Committee assigns the grade according to the academic status policies of the School of Medicine and Biomedical Sciences. Grades for the internship are based on completion of defined goals and clinical evaluations.

SUR-818 SUBINTERNSHIP IN SURGICAL INTENSIVE CARE 4 credits NOTE: Prerequisite-4th year Medical Students Dr. Flynn Number of students: 3-4

The goal of the Sub Internship in Surgical Intensive Care is to enable the student to develop a proficiency in the approach to and perioperative management of a variety of surgical diseases. This advanced internship is designed for a student who has developed a career interest in the care of the critically ill patient. It is designed as a tutorial in the strategies of decision making and monitoring of physiology in acutely ill patients. The course covers the principles of nutritional support, fluid resuscitation, mechanical ventilation, and cardiorespiratory support. The students will work closely with the resident and attending staff. All are integrated into the health care team and serve as subinterns with night call responsibilities.

All students are required to attend Department of Surgery grand rounds, Thursday critical care conference, and student case conferences. Each student must submit and present a clinical paper. Each will participate in night call with the health care team. Upon completion of this internship, the student will have acquired a variety of diagnostic and therapeutic skills as well as the cognitive knowledge to care for the critically ill patient.

The Student Evaluation and Education Committee assigns the grade according to the academic status policies of the School of Medicine and Biomedical Sciences. Grades for the internship are based on completion of defined goals and clinical evaluations.

SUR-820 PRECEPTORSHIP IN SURGERY *4 credits. Modules B-L. Contact department for site location. Prerequisite-Senior medical student or permission of OME and instructor. Requires permission of coordinator to register. Dr. Hassett Number of students: 4*

This course is designed to increase a student's clinical experience in surgery. Preceptorships are available in all of the clinical disciplines of surgery. Requests for this elective *must* be accompanied by a letter of support from a sponsoring faculty member. Students signing up for this course must discuss their faculty assignment and intended program with the department course coordinator in advance of taking the course.

SUR-890 COURSE AT OTHER UNIVERSITY *4 credits. Modules B-L. Contact department prior to registration. Prerequisite-Senior medical student. Dr. Hassett Number of students: unlimited.*

Requests for a clinical or research experience in surgery at another university are submitted to the department's course coordinator for the approval of the chairman (University at Buffalo). The request should be accompanied by a short description of the proposed course and the identity of the responsible faculty member.

SUR-950 RESEARCH IN SURGERY *4 credits. Modules B-L. Contact department for site location prior to registration. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Hassett Number of students: 4*

A research experience is available with many different members of the faculty. The purpose of the elective is to introduce the student to the scientific atmosphere of the surgical sciences. There are many different projects available, and each has its specific requirements. However, all of the projects involve the surgical preparation of the research model, the measurement of the experimental variables, and the assessment of the data. The student has the opportunity to acquire an understanding of experimental design and the methods for evaluation of the experimental data. All requests for this elective must be presented to the course instructor with a letter of support from the sponsoring member of the faculty and a description of the research project. A student requesting a research experience must file all pertinent information with the Department of Surgery's coordinator prior to registering for the course.

DEPARTMENT OF UROLOGY

The Department of Urology conducts a comprehensive program in undergraduate, graduate, and postgraduate medical education. These academic endeavors are directed towards clinical and research activities, emphasizing correlates between basic sciences and clinical problems. Clinical facilities of the following hospitals are utilized for these activities: Buffalo General Hospital, Children's Hospital of Buffalo, Erie County Medical Center, Millard Fillmore Hospital, Roswell Park Cancer Institute, and the Veterans Affairs Medical Center.

The goals of a rotation through Urology are to familiarize students with the principles of diagnosis and management of common Urologic disorders. Students are integrated as fully participating members of the Urology team at the individual institution to which they are assigned. Students, therefore, participate in clinical rounds, the diagnostic evaluation of patients, operative procedures and clinics. It is anticipated that students will develop skills in the evaluation of imaging studies and gain an introduction to the various diagnostic techniques, including endoscopy, sonography, CT scans and MRI.

The common goals of each of the rotations listed below are as follows: Students will be integrated as fully participating members of the Urology team at the institution to which they rotate. Students will participate in clinical rounds, operative procedure, patient evaluations, clinics and post-operative care, and will be expected to attend all departmental-wide teaching and clinical conferences and rounds, as well as those conferences specific to their particular institution. During their rotation, the students are encouraged to correlate clinical with pathologic findings. At the conclusion of the rotation it is anticipated that students will have developed an understanding of the various domains of Urology and to become familiar with at least the initial stages of a Urologic evaluation.

URO-800 SUBINTERNSHIP IN CLINICAL UROLOGY 4 credits. *Modules B-L. NOTE; A "G" after the module in the Class Schedule indicates the Buffalo General Hospital as the site. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Gerald Sufirin. Number of students: 1.*

This rotation provides diverse experience in Adult Urology, reflecting the spectrum of urologic conditions.

URO-800 SUBINTERNSHIP IN CLINICAL UROLOGY 4 credits. *Modules B-L. . NOTE; A "C" after the module in the Class Schedule indicates the Children's Hospital of Buffalo as the site. Prerequisite-Senior medical student or permission of OME and instructor. Dr. Saul Greenfield. Number of students: 1.*

This rotation provides educational opportunities in Pediatric Urology. Students gain insight into the diagnosis and management of pediatric urologic problems through participation in clinics, operating room, conferences and reviews of specific topics.

URO-800 SUBINTERNSHIP IN CLINICAL UROLOGY 4 credits. *Modules B-L. . NOTE; A "E" after the module in the Class Schedule indicates the Erie County Medical Center as the site. Prerequisite-Senior medical student or permission of OME and instructor. Drs. Kevin Pranikoff. Number of students: 1.*

In addition to general adult urology, this rotation provides additional in-depth experience in renal trauma, reconstructive Urology and Neurourology.

URO-800 SUBINTERNSHIP IN CLINICAL UROLOGY 4 credits. *Modules B-L. . NOTE; A "R" after the module in the Class Schedule indicates the Roswell Park Cancer Institute as the site. Prerequisite-Senior medical student or permission of OME and instructor. Dr. James Mohler. Number of students: 1.*

This rotation is primarily directed towards Urologic Oncology. Students will gain a unique experience in the overall management of the Urologic Oncology patient, which will include a multidisciplinary approach to urologic malignancies.

URO-890 COURSE AT OTHER UNIVERSITY 4 credits. *Modules B-L Prerequisites-Senior medical student.*

By arrangement with other university and chairman of Department of Urology.

URO-950 RESEARCH IN UROLOGY 4 credits. *Prerequisites: Senior medical student or permission of OME and instructor..*

Students may have an opportunity to work with a faculty member on a research project.
