

PHYSICS, B.S.

COMPUTATIONAL SPECIALIZATION or MATHEMATICAL SPECIALIZATION (CPTT)

(Fall 2017-Summer 2018)

PHYSICS BS COURSES & SUPPORTING COURSES (84-86 credits)

*Note: 2.0 GPA required in PHYS courses/B.S. degree

- _____ 5 PHYS 15200 Mechanics (C- or above)
- _____ 5 PHYS 25100 Heat, Electricity and Optics
- _____ 3 PHYS 30500 Intermediate Math Physics
- _____ 4 PHYS 31000 Intermediate Mechanics
- _____ 3 PHYS 31200 Intermediate Electricity & Magnetism
- _____ 3 PHYS 32200 Intermediate Optics
- _____ 3 PHYS 32500 Scientific Computing
- _____ 3 PHYS 34200 Modern Physics
- _____ 1 PHYS 34300 Modern Physics Laboratory
- _____ 3 PHYS 41310 Electricity & Magnetism II
- _____ 3 PHYS 41800 Thermal Physics
- _____ 3 PHYS 44200 Quantum Mechanics
- _____ 3 PHYS 48001 Senior Thesis I
- _____ 0 1 Class in PHYS 48002 Senior Thesis II

COMPUTATIONAL OR MATHEMATICAL SPECIALIZATION (CPTT):

_____ COMPUTATIONAL (17 Credits):

- _____ 4 CS 16000
- _____ 4 CS 16100
- _____ 3 CS 26000
- _____ 3 CS 32100 or 33100 or 38400
- _____ 3 CS 48600

_____ MATHEMATICAL (19 Credits):

- _____ 4 CS 16000
- _____ 3 MA 31400
- _____ 3 MA 41700
- _____ 3 MA 51000
- _____ 3 MA 52300
- _____ 3 MA 52500

SUPPORTING CHEMISTRY & MATHEMATICS COURSES

- _____ 4 CHM 11500 General Chemistry
- _____ 4 MA 16500 Analytic Geometry & Calculus I (C- or above)
- _____ 4 MA 16600 Analytic Geometry & Calculus II (C- or above)
- _____ 4 MA 17500 Intro to Discrete Mathematics (C- or above)
- _____ 4 MA 26100 Multivariate Calculus (C- or above)
- _____ 3 MA 35100 Elementary Linear Algebra (C- or above)
- _____ 3 MA 36300 Differential Equations

A&S BS LIBERAL ARTS REQUIREMENTS (14 credits — credits may vary with double counting/language placement – see advisor)

- _____ 3 Second Semester Writing (C- or higher) (ENG W140 or ENG W233)
- _____ 3 Speaking Requirement (C- or higher) (COM 11400 or HIST H125)
- _____ 8 Credits Language Sequence (credit/placement required for 2 semesters of foreign language)
_____ (5th semester) _____ (6th semester) one course at second semester level required
Options: (Arabic, French, German, Japanese, Latin, Spanish)

GENERAL EDUCATION REQUIREMENTS (33 Credits)

*Note: grades of C- or higher required in Gen Ed/2.0 GPA

**Up to 6 credits in Gen Ed GA1 to GB7 and 3 credits GCAP (C8) may originate in major discipline—see advisor for more information.

- _____ 3 GA1 Category A1 -- Written Communication (See Bulletin or myBLUEprint for **General Education** courses)
- _____ 3 GA2 Category A2 -- Speaking and Listening
- _____ 3 GA3 Category A3 -- Quantitative Reasoning
- _____ 3 GB4 Category B4 -- Scientific Ways of Knowing
- _____ 3 GB5 Category B5 -- Social & Behavioral Ways of Knowing
- _____ 3 GB6 Category B6 -- Humanistic and Artistic Ways of Knowing
- _____ 3 GB7/71 Category B7 or B71 -- Interdisciplinary or Creative Ways of Knowing
- _____ 9 Additional Credits -- Category A or B General Education courses
- _____ 3 **GCAP Category C8--Capstone Experience** (IPFW course only)

MINOR/ELECTIVES (to reach 120 credits): _____

IPFW Residency Requirements: _____ 32 credits at 200 level or above at IPFW _____ with 15 of 32 credits at 300-400 in major

B.S. Requirements: _____ 120 credits _____ 30 credits 300-400 level _____ 2.0 GPA Degree/Gen Ed _____ C- or above in Gen Ed Courses

PHYSICS, B.S.

PLAN— COMPUTATIONAL SPECIALIZATION or MATHEMATICAL SPECIALIZATION (CPTT)

(Fall 2017-Summer 2018)

Term: Year: 20				Term: Year: 20			
Course No.	Course Title	Pre-Reqs	Crs.	Course No.	Course Title	Pre-Reqs	Crs.
MA 165000 (GA3)	Analytic Geometry & Calculus 1	MA 159 or 154 (C- or above); placement	4	MA 16600	Analytic Geometry & Calculus II	MA 165 (C- or above)	4
CHM 11500 (GB4)	General Chemistry	H.S. CHM or 111 (C- or above); MA 154, 227, or 229 level	4	PHYS 15200 (Gen Ed A/B)	Mechanics	C: MA 166	5
PHYS 17000	Physics Seminar		1	CS 16000	Intro to Comp Science I	MA 15300; CS112 recommended if no program exp.	4
COM 11400 or HIST H125 (GA2/A&S)	Fundament of Speech or Great Debates		3	ENG W131 (GA1)	Read, Writ, & Inquiry I	Self-Place or ENG W129 (C- or above)	3
GB5	Gen Ed Social/Behavior		3				
Total Semester Credit Hours			15	Total Semester Credit Hours			16

Term: Year: 20				Term: Year: 20			
Course No.	Course Title	Pre-Reqs	Crs.	Course No.	Course Title	Pre-Reqs	Crs.
MA 26100	Multivariate Calculus	MA 166 (C- or above)	4	MA 35100	Elem Linear Algebra	2 sem calc (C- or above grades)	3
PHYS 25100	Heat, Electricity, and Optics	PHYS 152 (C- or above); P or C: MA 261	5	PHYS 34200	Modern Physics	PHYS 241 or 251 or 261	3
ENG W233 (Gen Ed A/B)	Intermed Expos Writing	ENG W131 (C- or above)	3	PHYS 34300	Modern Physics Lab	C: PHYS 342	1
CPTT Course (approved)	Computational or Mathematical Course	√	3-4	PHYS 31200	Interm Electricity & Magnetism	PHYS 251 and MA 363	3
				GB6	Gen Ed Hum/Artistic		3
				Gen Ed A or B	Gen Ed A or B course		3
Total Semester Credit Hours			15-16	Total Semester Credit Hours			16

Term: Year: 20				Term: Year: 20			
Course No.	Course Title	Pre-Reqs	Crs.	Course No.	Course Title	Pre-Reqs	Crs.
MA 36300	Differential Equations	√	3	PHYS 41800	Thermal Physics	PHYS 342	3
PHYS 41310	Intermed Elect & Mag II	PHYS 312	3	PHYS 30500	Intermed Math Physics	PHYS 251	3
CPTT Course	Computational or Mathematical Course	√	3	PHYS 32200	Intermediate Optics	PHYS 251/equiv	3
PHYS 32500	Scientific Counting	√	3	CPTT Course	Computational or Mathematical Course	√	3
FL 1	Foreign Language 1		4	FL 2	Foreign Language 2	FL 1/ placement	4
Total Semester Credit Hours			16	Total Semester Credit Hours			16

Term: Year: 20				Term: Year: 20			
Course No.	Course Title	Pre-Reqs	Crs.	Course No.	Course Title	Pre-Reqs	Crs.
PHYS 44200	Quantum Mechanics	PHYS 342 and MA 363 (C- or above grades)	3	PHYS 31000	Intermed Mechanics	PHYS 152 and 251; MA 261 or 263	4
PHYS 48001 (C8)	Senior Thesis I	√	3	PHYS 48002	Senior Thesis II	√	0
CPTT Course	Computational or Mathematical Course	√	3	Gen Ed A or B	Gen Ed A or B (if needed or elective)		3
CPTT Course (*if required or free elective)	Computational or Mathematical Course	√	3	GB7/71	Gen Ed Creat/Interdis (if needed or elective)		3
Elective	Free elective (*if needed/120 credits)		*1	Elective	Free elective		3
Total Semester Credit Hours			13	Total Semester Credit Hours			13

√ = See IPFW Bulletin or myBLUEprint for additional course prerequisites

Summer Courses:

**120 credits required for Bachelor of Science degree
2.0 GPA required for Bachelor of Science degree/major**