570 Naval Mechanical Engineering Generic 8 Quarter Matrix (winter start) - plus refresher

## Approved at the April 2019 570 Curriculum Review



Legend Undergraduate/Prerequisite Courses 3000-level Technical Non-MAE 3000-level ARE Courses 4000-level Specialization Tracks Required (other) Courses

	570 stud	lents must take (	or validate) all co	re classes	+ all 3000-level classes in <u>two of five</u> Specialization Tracks										+ required other (JPME/Cyber) and optional courses to fill matrix with a mimimum of 4 courses/quarter		
QTR	ME Core Classes           *570 students must take (or validate) all core classes, plus all 3000-level classes in two of five Specialization Tracks				add TRACK #1: Fluids, Thermodynamics and Heat Transfer Specialization Track required 2000-level electives		or add TRACK #2: Control Systems Specialization Track required 3000-level electives		or add TRACK #3: Solids & Structures Specialization Track required 2000-level electives		or add TRACK #4: Materials Science Specialization Track *Moterials Track students must take both Corrolan and Welding causes. required 300-level electrices		or add (for the 5602P code) TRACK 95: Design / Total Ship Systems Engineering (TS45] Specialization Track *There is potential to extend one quarter with this track. Ask the Program Officer. required 3000-level required 4000-level		and add (if JPME (Only if you are an USN Unrestricted Line Officer)	Applicable) Others (All EDOs must take E02701. The MN courses are optional, but offer DAU equiv.)	and add (optional) Certificate Suggestions (not an all-inclusive list) * Excellent way to to fill out matrix to the minimum required 4 closses/qtr
(if necessary) Rfr	MA 1119 (A-9) (L.2.3.4) Single Variable Calculus (	NARI 113 (8-0) (5.4.4.4) Single Variable Calculus in valte Matrix Algebra	NIF2501 (A 1) IL-3) Status (MALLLAR 1)	AE2460 (B.2) 11-0 inero te Oglital Computation Dr 202440 17-0											NW3230 (4-0) (1,2,3,4) Maritime and Joint Strategic Planning	E02701 (4-2 ) (2,4) Intro to Cyber Systems	268 - Data Science Cr3650 Cyber Data Mgmt & Analytics CS4315 Intro to Machine Learning DS4106 Advance Data Analysis OS4118 Statistical and Machine Learning
W (2)	MA1115 (4-0) (1,2,3,4) Multi-Variable Calculus (MA1113-4/EQ)	MA1116 (3-0) (1,2,3,4) Vector Calculus (MA1113-4/EQ)	ME2502 (4-1) (2, 4) Engineering Dynamics (ME2501)	ME2601 (4-1) (2,4) Mechanics of Solids I (ME2501 and MA1114/EQ)											NW3275 (4-0) (1,2,3,4) Joint Maritime Operations – part 1	ME1000 PE Prep	273 - Space Systems Certificate SS3011 Space Tert & Applications PH0305 Space & Althorne Senor Sys SS3053 Military Application of DOD and Commercial Space Systems (classified)
Sp (3)	MA2121 (4-0) (1,2,3,4) Diff Equations (MA1114)	MA2043 (4-0) (1,3) Intro to Matrix and Linear Algebra	ME2801 (3-2) (1,3) Sys Dynamics (AE2440 / MA2121-C)	ME2101 (4-2) (1,3) Thermodynamics (MA1115)											NW3276 (2-2) (1,2,3,4) Joint Maritime Operations – part 2	MN3331 (5-1) (1,2,3,4) Principles of Acquisition and Program Management	282 - Systems Engineering SE3100 Fundamentals of Sys Eng SI300 Fundamentals of Engineering Project Management + two more
Su (4)	MA3232 (4-0) (2,4) Numerical Analysis (MA1115/MA2121)	ME2201 (3-2) (2,4) Intro to Fluid Mechanics (ME2502)	MS2201 (3-2) (2,4) Engineering Materials (Undergrad courses in calc, physics and chem.)	EO2102 (4-2) (2,4) Basic Electronics and Electrical Machines (MA2121)											NW3285 (4-0) (1,2,3,4) National Security Decision Making	MN3384 (4-1) (1,3) Principles of Acquisition Production and Quality Management	291 - Electric Ships and Power EG130 Detertical Machinery Sptems EG1320 Adv. Electrical Machinery Sptems EG1350 Avew Electronics EG1550 Applied Power Electronics
F (1)	MA3132 (4-0) (1,2,3,4) Partial Diff Eqns. (MA2121/MA1116)	MS3202 (3-2) (1,3) Prop, Perf and Failure of Eng Materials (MS2201/EQ)			ME3201 (4-1) (1,3) Applied Fluid Mechanics (ME2101/ME2201/ MA3132-C)		ME3801 (3-2) (2,4) Automatic Controls (ME2801)		ME3611 (4-0) (1,3) Mechanics of Solids II (ME2601)		MS3304, Corrosion OR MS3606, Welding (Materials Track students must take <u>both</u> )		SE3100 (3-2) (1,3) Fundamentals of Systems Engineering OR TS3002			MN3303 (4-0) (2,4) Principles of Acquisition and Contract Management	279 - Engineering Modeling & Simulation M02001 Intro to Physice-Based M & S M03001 Basic Eng. Concepts in M & S M03002 Overview of Computers, Wespons Platforms & Elect. Sys M04000 Application of Engineering M & S
W (2)	ME3711 (4-1) (2) Design of Machine Elements (ME2201, ME2601)	ME3240 (4-2) (2,4) Marine Power and Propulsion (ME2101/ ME2201)	Any ME4XXX Specialization Elective (ask your advisor)		ME3150 (4-1) (2,4) Heat Transfer (ME2101/ME2201/ MA3132-C)	ME4XXX Track #1 Specialization Elective	ME3720 (3-2) (2) Intro to Unmanned Systems	ME4XXX Track #2 Specialization Elective	ME3521 (3-2) (2,4) Mechanical Vibrations (ME2503/ ME2601/ MA2121)	ME4XXX Track #3 Specialization Elective	MS3XXX TBD New Materials Course	MS4XXX Track #4 Specialization Elective	TS3000 (4-2) (1) Basic Electronics and Electrical Machines	TS4000 (3-2) (3) Naval Combat System Engineering (TS3000/ TS3003)			234 - Defense Energy P19700 Fundamentals of Energy EN3000 Defense Energy Seminar + two more S&T Energy electives
Sp (3)	ME0810 (0-8) Thesis	MS3304 (3-2) (3), Corrosion OR MS3606 (3-2) (1) Intro to Welding and Joining Metallurgy	Any ME4XXX Specialization Elective (ask your advisor)		ME3450 (3-2) (1,3) Comp Methods in Mechanical Eng (ME2101/ME2601/ ME2201/ MA3132)	ME4XXX Track#1 Specialization Elective		ME4XXX Track #2 Specialization Elective	ME3450 (3-2) (1,3) Comp Methods in Mechanical Eng (ME2101/ME2601/ ME2201/MA3132)	ME4XXX Track #3 Specialization Elective		MS4XXX Track #4 Specialization Elective	TS3003 (3-2) (2,4) Naval Combat System Elements	TS4001 (3-2) (3) Integration of Naval Engineering Systems (TS3000/ TS3001/ TS3002)			231 - Combat Systems Sci & Engineering PCI200 Physics of Electromagnetic Sensors and Photonic Devices PCI400 Survey of Underverter Accustics PCI300 Survey of He Effects of Weapons PCI300 Avanced Weapons Concepts
Su (4)	ME0810 (0-8) Thesis	ME0810 (0-8) Thesis	TS3001 (3-2) (2,4) Fund Principles of Naval Architecture (ME2201/ME2601)	Any ME4XXX Specialization Elective (ask your advisor)		ME4XXX Track #1 Specialization Elective		ME4XXX Track #2 Specialization Elective		ME4XXX Track #3 Specialization Elective		MS4XXX Track #4 Specialization Elective		TS4002 (2-4) (4) Ship Design Integration (TS4001/ TS4000)	Mechanical Engineer's Degree <u>Requirements:</u>	ME0810 (0-8) Additional Thesis (requries MAE Chair approval)	296 - Cyber Systems Certificate EC3730 Cyber Network and Physical Infrastructures EC3740 Reverse Eng in Electronic Systems + two more
F (1)	ME0810 (0-8) Thesis	ME3712 (4-2) (1) Capstone Design project (ME3150, ME3450, ME3521, ME3711)												TS4003 (2-4) (1) Total Ship Systems Engineering (TS4002)	MAE 4XXX = 32 Qhrs MAE 3/4XXX = 52 Non-MAE 3/4XXX = 12 Thesis = 28 Qhrs	ME0810 (0-8) Additional Thesis (requries MAE Chair approval)	257 - Cyber Security Fundamentals CSI800 Intro to Computer Security CSI870 Secure Management of Systems CSI860 Network Security

All students must maintain a minimum of 4 (graded) courses + Seminar per quarter.

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