

**Longwood University/Old Dominion University
ARTICULATION AGREEMENT 2011-2012**

Bachelor of Science in Physics to a Bachelor of Science in Mechanical Engineering

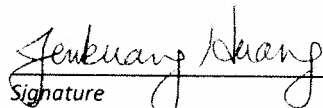
| Longwood University B.S. degree in Physics | | | | Old Dominion University B.S. degree program in Mechanical Engineering | | | |
|----------------------------------------------------|------------------|------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------|---------------|-----------------------------------------------------------------|-----------|
| Major-*** require C- or better for transfer | | | | Major | | | |
| CHEM | 111 | ***Fundamental Chemistry I | 4 | CHEM | 121/ 122N | Foundations of Chemistry | 4 |
| CHEM | 112 | ***Fundamental Chemistry II | 4 | CHEM | 123/ 124N | Foundations of Chemistry | 4 |
| PHYS | 201 | ***University Physics I | 4 | PHYS | 231N | University Physics | 4 |
| PHYS | 202 | ***University Physics II | 4 | PHYS | 232N | University Physics | 4 |
| MATH | 261 | ***Calculus I | 4 | MATH | 211 | Calculus I | 4 |
| MATH | 262 | ***Calculus II | 4 | MATH | 212 | Calculus II | 4 |
| MATH | 361 | ***Calculus III | 4 | MATH | 312 | Calculus III | 4 |
| MATH | 362 | ***Differential Equations | 3 | MATH | 307 | Ordinary Differential Equations | 3 |
| CMSC | 204 | ***Intro Programming | 3 | CS | 150 | Problem Solving and Programming I | 3 |
| PHYS | 260 | Introduction to Experimental Design | 2 | PHYS | 2ELE | Elective | 2 |
| PHYS | 321 | Modern Physics I | 3 | PHYS | 323 | Modern Physics I | 3 |
| PHYS | 324 | Thermodynamics | 3 | PHYS | 454 | Thermal and Statistical Physics | 3 |
| PHYS | 352 | Mechanics | 3 | PHYS | 319 | Analytical Mechanics | 3 |
| PHYS | 332 | Electricity and Magnetism | 3 | PHYS | 320 | Intro to Electromagnetic Theory | 3 |
| PHYS | 331 | AC/DC Circuits | 4 | EET | 350 | Combination of PHYS 341+ 331= EET 350 (substitute for ENGN 110) | 4 |
| PHYS | 341 | Electronics | 4 | EET | 350 | Combination of PHYS 341+ 331= EET 350 (substitute for MAE 111) | 4 |
| PHYS | ELE | Electives (Please see Longwood catalog for list of applicable courses) | 6 | PHYS | ELE | Electives | 6 |
| Total in Major | | | 62 | Total in Major | | | 62 |
| General Education | | | | General Education | | | |
| ENGL | 150 | Writing and Research | 3 | ENGL | 110C | English Composition | 3 |
| ART Achievement | REQ | One from ART 125, 160, or THEA 101 | 3 | FPAP | 1REQ | Human Creativity Way of Knowing | 3 |
| ENGL | REQ | Choose one literature course from ENGL 202, 201, or 203 | 3 | LIT | 1REQ | Literature Way of Knowing | 3 |
| HIST | 100 or 110 | Western Civilization | 3 | HISP | 1REQ | Interpreting the Past Way of Knowing | 3 |
| Social Science | REQ | Select one from courses listed in Longwood catalog | 3 | SSCP | 1REQ | Human Behavior Way of Knowing | 3 |
| FORGN LANG | REQ | FREN 101, SPAN 201 OR GERM 201 | 3 | FLP | 1REQ | Foreign Language | 3 |
| PHED or RECR | 101 | Health / Physical Education | 2 | PE | 1ELE | Elective | 2 |
| LSEM | 100 | Longwood Seminar | 1 | UNIV | 100 | University Orientation | 1 |
| DIVERSITY | REQ | Select one from courses listed in Longwood catalog | 3 | | ELE pr REQ | Elective or General Education Requirement | 3 |
| CMSC/ MATH | 350 | Ethics in Math or Computer Science | 3 | GNRL | 3ELE | Upper Division Elective (substitute for ENMA 480) | 3 |
| ENGL | 400 | Adv Writing Seminar | 3 | ENGL | 327W | Advance Composition (substitute for ENGL 231C) | 3 |
| Total Additional General Education | | | 30 | Total Additional General Education | | | 30 |
| Total credits earned at Longwood University | | | 92 | Total Credits transferred to ODU | | | 92 |

| Additional Requirements - ODU | | | |
|-------------------------------------------|-----------|------------------------------------------------|-----|
| MAE | 201 | Materials Science | 3 |
| MAE | 205 | Dynamics | 3 |
| MAE | 204 | Statics | 3 |
| MET | 120 | Computer Aided Drafting | 3 |
| MAE | 220 & 225 | Engineering Mechanics II—Solid Mechanics & Lab | 4 |
| MAE | 203 | ME Lab I-Materials | 1 |
| MAE | 311 | Thermodynamics I | 3 |
| MAE | 303 | Mechanics of Fluids | 3 |
| MAE | 305 | ME Lab III-Thermo/Fluids | 1 |
| MAE | 340 | Computational Methods in ME | 3 |
| MAE | 312 | Thermodynamics II | 3 |
| MAE | 332 | Mechanical Engineering Design I | 3 |
| MAE | 315 | Heat and Mass Transfer | 3 |
| ENGN | 401 | FE Review | 1 |
| MAE | 434W | Project Design and Management I | 3 |
| MAE | 433 | Mechanical Engineering Design II | 3 |
| MAE | 436 | Dynamic Systems & Control | 3 |
| MAE | | Options (3 courses) | 9 |
| MAE | 435W | Project Design and Management II | 3 |
| Total Credits to be Taken at ODU | | | 58 |
| Total Transfer Credits in Major | | | 62 |
| Total Credits in General Education | | | 30 |
| Total Credits Earned for Dual B.S. Degree | | | 150 |

Students are required to complete a minimum of 126 credits for graduation from Old Dominion University. Student must earn a grade of C- or better from Longwood to transfer courses to Old Dominion University. Students must complete at least 32 credit hours at Old Dominion University to receive a baccalaureate degree from the university.

 8/15/11
Signature Date


Dr. Melissa Rhoten
Chair, Department of Chemistry & Physics
Longwood University

 7/7/11
Signature Date


Dr. Jen-Kuang Huang
Chair, Batten College of Engineering and
Technology (Mechanical Engineering)
Old Dominion University

 8/15/11
Signature Date


Dr. Michelle Parry
Director, Dual Degree and Physics Program
Longwood University

 7/7/2011
Signature Date

Dr. Oktay Baysal
Dean, Batten College of Engineering and
Technology
Old Dominion University

 8/26/11
Signature Date

Dr. Charles Ross
Dean, Cook-Cole College of Physics
Longwood University

 7/12/11
Signature Date

Dr. Carol Simpson
Provost and Vice-President, Academic Affairs
Old Dominion University

 8/29/2011
Signature Date

Dr. Ken Perkins
Interim Vice President, Academic Affairs
Longwood University

Mechanical Engineering Schedule

LU Physics + ODU Mechanical Engineering (Total Credits Listed-61 + CS 150)

| | |
|---------------------------------------------------------------|---|
| Summer Before 1 st Semester at ODU | |
| MAE 204 – Engineering Mechanics I – Statics | 3 |
| CS 150 - Problem Solving and Programming I (if needed) | 3 |

| Fall 1 st Semester ODU (7 th semester LU) | credits | Spring 2 nd Semester ODU (8 th semester LU) | |
|---------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------|----|
| MAE 201 – Material Science | 3 | MAE 303 – Mechanics of Fluids (Pre-re: MAE 205, Co-re: MAE 305, MAE 311) | 3 |
| MAE 203 – Mechanical Engineering Lab I – Material Science (Co-re: MAE 201, CS 150) | 1 | MAE 305 – Mechanical Engineering Lab III – Thermal Fluids (Co-re; MAE 303) | 1 |
| MAE 205 – Dynamics (Pre-re: MAE 204) | 3 | MAE 311 – Thermodynamics I (Co-re: MAE 303, MAE 305) | 3 |
| MAE 220 – Engineering Mechanics II – Solid Mechanics (Pre-re: MAE 204) | 3 | MAE 340 – Computational Methods in ME | 3 |
| MAE 225 – Mechanical Engineering Lab II – Solid Mechanics (Co-re: MAE 220, Pre-re: CS 150) | 1 | MAE 332 – Mechanical Engineering Design (Pre-re: ME 201, 205, 220 and MET 120. Co-re: ME 225) | 3 |
| MET 120 – Computer Aided Drafting. | 3 | | |
| Total | 14 | Total | 13 |

Graduate with BS Physics LU

| Fall 3 rd Semester ODU | | Spring 4 th Semester ODU | |
|--------------------------------------------------------------------|--------------|---------------------------------------------------------------------|----|
| ENGN 401 – FE Review | 1 | MAE 435W – Project Design and Management II (Pre-re: ME 332) | 3 |
| MAE 434W – Project Design and Management I (Pre-re: ME 332) | 3 | MAE 436 – Dynamics Systems & Control (Pre-re: MAE 205) | 3 |
| MAE 312 – Thermodynamics II (Pre-re: MAE 311, MAE 303) | 3 | MAE 433 – Mechanical Engineering Design II | 3 |
| MAE 315 – Heat and Mass Transfer (Pre-re: MAE 311, MAE 303) | 3 | MAE elective | 3 |
| MAE elective | 3 | MAE elective | 3 |
| COMM 101R | 3 | | |
| Total | 16 | Total | 15 |