

Northeast Wisconsin Technical College

Land Acknowledgement Statement

The region served by NWTC **occupies the ancestral home** of the Menominee Nation, who have **persisted here** in Northeast Wisconsin from **before recorded history** to the present day. The College's Green Bay campus exists **upon lands ceded from the Menominee Tribe to the Oneida Nation**. We acknowledge this land we stand upon today as sacred, historical, and significant to the Menominee and Oneida Nations as are the **lands of all First Nations People**.

See more detail at <https://tinyurl.com/244wh3xf>



Class Syllabus

INTRO TO SOLAR ENERGY

Catalog # 10-482-126 & Class # 83104

Starts Thu10/20/22, Ends Thu 12/15/22

Instructor Information

Instructor: John Hippensteel, PE
Office: EE 101 G (EE 116)
Telephone: 920-498-7103 (Cell: 920-559-3337)
Email: john.hippensteel@nwtc.edu
Instructor Availability: By Appointment on
Mondays 8:30 to 11 am
Wednesdays 8:30 to 11 am
And as mutually agreed upon, in person, email, remote/WebEx

CLASS INFORMATION

Course Description: 10-482-126 INTRODUCTION TO SOLAR ...an overview of the use of sunlight to produce heat and electricity and the practical and economical use of solar power and solar thermal systems. Learn the importance of energy efficiency and the economics of solar hybrid designs.

Credits: 4

Class Schedule: This class meets on the following days/times:

M	Tuesday	W	Thursday	F	S	S
	7:30 AM – 11:15 PM		7:30 AM – 11:15 PM			

Class Delivery Mode: This class meets in an 8 week format in person.

Class Meeting Location: NWTC Green Bay campus in the Great Lakes Energy Education Center in room **EE 116**, unless otherwise notified.

Pre-requisites/Corequisites: None

Textbook: Photovoltaic Systems 3rd Edition, by Jim Dunlop.
Solar Water Heating, Revised & Expanded Edition by Bob Ramlow

Supplies/Technology: Calculator, safety glasses and access to a computer for email, internet research and Blackboard.

Course Competencies: You have the opportunity to learn the following skills in this course:

COMPETENCIES
1. Describe energy and its different forms.
2. Describe how society uses energy.
3. Evaluate the pros and cons of society's current energy sources.
4. Identify how renewable resources can be used to make energy.
5. Explain the pros and cons of renewable energy.
6. Define Solar Energy as an energy resource.
7. Describe how Solar Energy is used to make electricity.
8. Describe the different components of a photovoltaic system.
9. Explain the steps involved in a photovoltaic installation.
10. Describe how Solar Energy is used to heat water and air for use in buildings.
11. Compare types of solar hot water heating systems and determine their suitability for the application.
12. Analyze the purpose and operations of the different components of a solar hot water system.
13. Compare types of solar air heating systems.
14. Identify and explain the purpose & operation of the different components of a solar air heating system.
15. Explain the steps involved in solar thermal system installation.
16. Explain the process of producing electricity from solar thermal concentrating collectors.
17. Explain the process of air conditioning using solar thermal collectors.

Employability Skills: In addition to specific job-related training, NWTC has identified transferrable employability skills reaching beyond the context of a specific course. These are:

NWTC's TRANSFERABLE EMPLOYABILITY SKILLS
1. Communicate Effectively
2. Work Cooperatively and Professionally
3. Think Critically and Creatively
4. Solve Problems Effectively
5. Value Individual Differences and Abilities
6. Demonstrate Personal Accountability
7. Demonstrate Community and Global Accountability

Instructor Responsibilities:

As a NWTC instructor, I am expected to:

- Maintain a professional, safe learning environment while adhering to the policies of the college.
- Provide open and frequent communication with students regarding their progress in this class.
- Reply to communications within 48 business hours.
- Grade assignments and post scores in Blackboard regularly.
- Provide feedback to guide learners toward improvement of their coursework.
- Post information about assignments in Blackboard Class Materials and Grade Center.

(In the event of a college level cancellation) Communicate with students within 24-hours a detailed plan regarding expectations for responding to the cancellation.

Student Responsibilities:

As a NWTC student, you are expected to:

- Follow the policies of the College as outlined by the Student Handbook (noted above in Rights & Responsibilities section) and of the Instructor as outlined in the course syllabus.
- Monitor and use your NWTC Student Email account. Email is the official mode of communication at NWTC.
- Make an honest attempt to use correct English grammar and punctuation in all written communications.
- Utilize Starfish to monitor your course success, to communicate with instructors, and to connect with college services.
- Follow the due dates established in the Course Calendar (found at the end of this document) and posted in the electronic calendar in Blackboard.
- Keep your contact information up to date in [RAVE](#) to ensure that you receive prompt notification in the event of a college closure.
- Communicate questions, comments or concerns to your instructor via email, voicemail, or in-person.

Student Services to Support You:

Being in college is an exciting time to develop skills, further your career path, and build community. We don't want financial challenges to get in your way! Our team is ready to support basic needs such as groceries, housing assistance, transportation assistance, and more. Our goal is to keep you on track with your studies and educational goals. If you are experiencing a financial emergency or an unexpected event in your life, let us help. Support services are available at all NWTC locations. Our main office is located on the Green Bay campus in SC133. We can be reached by phone (920) 498-6258, email supportservices@nwtc.edu or in-person. For more information, please visit us at www.nwtc.edu/student-experience/student-support-services.

Additionally, NWTC provides many services and support networks to assist our students. Descriptions of these services can be found in the NWTC Student Handbook or at www.nwtc.edu/students. We encourage you to learn about the resources available to you, ranging from student involvement and personal counseling to academic, financial aid, or career advising. When you are looking for services, please contact your instructor or academic advisor via Starfish, or by calling (920) 498-5444.

Academic Coaching (Tutoring) at NWTC:

Academic Coaching provides an additional layer of support to ensure students achieve their academic goals. Academic Coaching is committed to serving all students as an academic resource to

promote student growth and success. Students who use Academic Coaching receive content help, but also gain study skills, organization skills, time management, and confidence. We understand that school can be challenging; let us help you reach your academic goals at www.nwtc.edu/academiccoaching

NWTC ALL-COLLEGE POLICIES

These policies are in effect for all classes at NWTC.

This syllabus is a learning contract between you and your instructor. In addition to your syllabus, there are policies and procedures listed in the NWTC Student Handbook that all students must uphold. Please refer to the NWTC Student Handbook to raise your awareness and understanding of the College's expectations.

[NWTC Student Handbook](#)

- [Academic Integrity \(includes Plagiarism, cheating and collusion\)](#)
- [Drop from a Class or Program](#)
- [Student Academic Grievance](#)
- **Discrimination and Harassment Prevention:** NWTC is committed to embracing the worth of every individual and promoting a respectful environment. Discrimination and harassment of protected categories in its employment and educational programs is prohibited. For questions or concerns, contact Mohammed Bey, Chief Diversity Officer, by email at mohammed.bey@nwtc.edu or by phone at (920) 498-6826.
- **Disability Act Statement:** NWTC is committed to creating a learning environment that meets the needs of its diverse student body. NWTC complies with all provisions of the Americans with Disabilities Act and makes reasonable accommodations upon request. If you have a disability, please call Disability Services at (920) 498-6904 to begin a conversation regarding the support services available to you or to request an official accommodation.
 - [Accessibility & Data Privacy](#)

Student Academic Calendar: Visit [Academic Calendar page](#) for important College dates you should add to your personal calendar.

CLASS SPECIFIC & DEPARTMENT POLICIES

In addition to the college policies referenced above, the following department & instructor policies also apply.

Appropriate Use of Technology:

The use of Social Media, cell phones, and other electronic devices are encouraged, and expected for specific class topics and class research only. Students are expected to respect others' views and display common courtesy when posting their views to online discussions, as well as in classroom discussions. It is important that everyone understands how to use online course tools and etiquette in a way where ALL students feel safe and supported.

Technology Skills & Assistance:

Technology Help

Get technical assistance by calling the Student Help Desk at (920) 498-6900 or 1-866-235-5037.

Learn more about the technology skills needed to be successful at NWTC (such as sending email, using software for assignments, submitting online work, and using test monitors) by watching the [Technology 101 video series](#) or visiting the [Ask a Librarian FAQ site](#).

Find out how to [Download Office 365 for Free](#) and access [Off-Campus Software](#). Learn how to [borrow equipment from NWTC](#).

Campus Closure Day(s) Procedure:

In the event of a campus closure, NWTC and or instructors will provide detailed information regarding expectations for students, should the need arise.

Class Cancellation: Class cancellations will be posted as early as possible at: <http://www.nwtc.edu/Lists/CancelClasses/WebView.aspx>

Syllabus Changes:

Instructors retain the right to make changes based on the timeline of the class, feedback from learners and/or logistical issues. Students will be informed as soon as a change is made. A current copy of the course syllabus will be maintained by the division office

Attendance and Participation:

You will receive a Participation Grade for each class period. In a face-to-face class, we learn from each other in an interactive, real-time format, and we need to make the most of this opportunity. Active participation includes:

- Attending class,
- Arriving on time,
- Being prepared to participate in class activities by completing the assignment(s),
- Focusing on the lesson during class time,
- Making a positive contribution to the lesson by paying attention and participating in discussions,
- Treating each person and opinion with respect
- Using electronic devices for classroom purposes only.

Submitting Assignments: (Be sure to save a copy of every assignment before you submit it so that you don't lose any work.)

Each assignment in the Class Materials has a link at the bottom that allows you to submit your work through Blackboard. The file name of the document that you submit should include the ASSIGNMENT NAME & NUMBER and YOUR FULL NAME. For example:

Barb Johnson LP 10 Wind Energy.pptx.

The body of your submittals should include The COURSE NAME, ASSIGNMENT NAME & NUMBER, YOUR FULL NAME, and DATE. For example:

Renewable Energy & Sustainability
LP 1 Assignment A, What Kind of Transportation Energy Did You Use Today?
Barb Johnson
8/27/18

You can submit your work in .doc, .docx, .xls, .xlsx, .pdf, .rtf, .ppt, .pptx or other MS Office formats ONLY. (Open Office documents must be saved and submitted in MS Office or .pdf formats ONLY.

Grading Policy:

You can earn up to full credit for an assignment by submitting it in Blackboard by the assigned due date. Expect one letter grade deduction for every day of late submittal. For special situations make-up work is allowed with approval from instructor. Extra credit projects may be available.

Grading Scale:

Percentage	Grade
91-100	A
81-90	B
71-80	C*
51-70	D
0-50	F

* C is the minimum passing grade for this class for Energy Management & Solar Energy program students.

Safety Policy: Safety is paramount, and you will be expected to dress and act suitably for the situation, especially during any lab work and or field trips. Dress accordingly and always come prepared for all weather conditions.

**Course Calendar:
Due Dates & Competency Map
Intro to Solar, 104-82-126
Fall 2, 2022, #83104**

WK	LP	Topic/Competency	Due Dates	Possible Points	COMPETENCIES ASSESSED	EMPLOYABILITY SKILLS ASSESSED
1	Syllabus	Syllabus email Plan for Success Class Participation	Thu 10/20	0 0 5	1-17	1-7
1	LP 1A	Photovoltaics & Solar Radiation Current Event Class Participation	Tue 10/25	10 5 5	1-7	1-7
1	LP 1B	PV System Components, Configurations, Cells, Modules & Arrays Class Participation	Thu 10/27	10 5	6, 7, 8	1-7
2	LP 2A	Batteries, Charge Controllers & Inverters Book / Journal Review Class Participation	Tue 11/1	10 5 5	8, 9	1-7
2	LP 2B	PV System Sizing Class Participation	Thu 11/3	10 5	7, 8, 9	1-7
3	LP 3A	Mechanical Integration Current Event Class Participation	Tue 11/8	10 5 5	9	1-7
3	LP 3B	Electrical Integration Class Participation	Thu 11/10	10 5	8, 9	1-7
4	LP 4A	Utility Interconnection, Permitting, Inspection Book / Journal Review Class Participation	Tue 11/15	10 5 5	9	1-7
4	LP 4B	Commissioning, Maintenance & Troubleshooting Class Participation	Thu 11/17	10 5	7, 8, 9	1-7
5	LP 5A	Solar Thermal Use in Buildings Current Event Class Participation	Tue 11/22	10 5 5	10	1-7
5	LP 5B	Solar Thermal Use in Buildings Class Participation	Tue 11/29	10 5	10	1-7
6	LP 6A	Solar Hot Water Systems & Components Book / Journal Review Class Participation	Thu 12/1	10 5 5	11, 12	1-7

6	LP 6B	Solar Air Heating Systems & Components Class Participation	Tue 12/6	10 5	13, 14	1-7
7	LP 7A	Solar Thermal System Installation Current Event Class Participation	Thu 12/8	10 5 5	15	1-7
7	LP 7B	Maintenance, Troubleshooting & Safety Class Participation	Tue 12/13	10 5	15	1-7
8	LP 8A	Solar Thermal Power Plants & Electricity Production Book / Journal Review Class Participation	Thu 12/15	10 5 5	7, 16	1-7
8	LP 8B	Solar Thermal AC & Refrigeration Class Participation	Thu 12/15	10 5	17	
8	Final Exam	Final Exam	Thu 12/15	100	1 - 17	1-7
			TOTAL	395 points possible		

NOTES: All Assignments are due before the start of class on the Due Dates shown above.

Special Events: You may have the opportunity to attend optional conferences and events during this semester. (Attending these events is a great learning opportunity, but attendance is not required.) NOTE: Other field trips may be available and will be posted in the Announcements section of Blackboard.

Energy and Conservation Club (#405)

is a great way to get involved with many school projects in this subject area.

<https://www.nwtc.edu/student-experience/student-involvement/clubs-and-organizations/energy-conservation-club>

Advisors: Jenny Brinker & John Hippensteel

Jenny.Brinker@NWTC.EDU & John.Hippensteel@NWTC.edu

Student Agreement: After you have read the syllabus, please send me an e-mail with the following statement: ***I confirm that I have read the course syllabus and agree to the class policies, procedures, due dates, and all the other information communicated in the syllabus.***

Covid Protocols

- **Monitor for symptoms, if you do not feel well, stay home and we encourage you to test for COVID.** If your symptoms are consistent with COVID-19, please complete an [Employee COVID Report](#) located on the Coronavirus HUB. When filling out a report, please answer all questions as thoroughly as possible.
- **If a student lets you know that they don't feel well or are a close contact,** please complete the Starfish alert. A member of the COVID Response Team will work with the student to determine the earliest return to campus dates. In Starfish faculty should look for “**Quarantine Resources**” once they click “Referral” in order to notify of a student that's reported exposure/positive test.
- **Face coverings** are optional, however we encourage those who are not fully vaccinated/boosted and those that are more comfortable to wear face coverings. If you recently had COVID or are a close contact, you will be required to wear a mask for a period of time. That information will be included in the COVID response when an Employee or Student report is completed.
- **Wash your hands often.** Washing your hands regularly reduces the spread of germs.
- **Cover coughs and sneezes.**