Dr. Hamilton: Hello, I'm Dr. Stacey Hamilton, state extension dairy specialist with the University of Missouri and I'd like to welcome you to the pasture-based dairy online course. I want to wish you the best in taking this class and hope that you meet your goals, your objectives, your needs, and what you're trying to get out of it. But I will say something that online classes are a bit different. A lot of the responsibility is going to fall on you as a participant or as a student. Because remember, as instructors, we don't have the ability to look out there in the classroom and see your eyes or see your expressions or see your hand raised up with a question. We don't have that ability, so that's going to lie on you guys and gals to give us feedback.

Dr. Hamilton: If you've got a question or you're not understanding something or you disagree with something send emails to the instructor for that week or be prepared. Take notes while you're listening to the lectures and say, "I don't understand this part or I disagree with that part." And come to the synchronous session with those questions or those comments and generate discussion. So that's going to be on you guys and gals as you take the class because like I said, we can't see what's going on out there and whether we're doing a good job or a poor job in trying to convey a message. The cool advantage of the class obviously for many of you is going to be, you can do it when you want to. If you're one of the night owls and you want to be looking at the lectures at 2:30 in the morning, go for it.

Dr. Hamilton: That's an advantage. That's one of the reasons why we're putting it out there and it's also, it's really tough to get a lot instructors together at once and so hopefully you're going to get a glimpse of some of the guys that are experts in their fields in milk quality and reproduction, pasture management, economics and where we can get them all together at once at your fingertips and when you want them. The other thing that I want to make sure you guys understand and you feel comfortable with is that if you ever have something that you don't agree with, if somebody says something along the lines, well, you need to be using this type of forge and you've got experience or you think that there's a different or a better way, bring that to the discussion. That's what this is all about is critical thinking and proposing an idea or a concept and defending it and getting discussion going amongst the instructors and the participants and students and so that we can all can learn more about how to improve upon these systems.

Dr. Hamilton: The biggest thing that I want you guys to take away from this is, this is a systems approach. You've got cows. You've got grass. You've got land. You've got people and we're going to be talking about those as individualistic, but I want you to be thinking about how they all tie together. How does it work together? Does that repro system work with the nutrition system? Does the forge system work with that and these sorts of things and be remembering that our ultimate goal is that we want to be sustainable. We want to be profitable and we want to be happy. Does it meet these types of goals when we're doing that? Backing up a little bit, remember we will be having a synchronous session that will be typically on Thursday nights at 7:00 but we can negotiate that and that's where you're going to be bringing your ideas and thoughts and these sorts of things.

Dr. Hamilton: Where I'm going to go from this next is just trying to bring up the different systems that we're going to be talking about. The genetics, the herd health, milk quality, reproduction, nutrition, soils and fertility, the forages, the infrastructure and then lastly, you're going to see probably the most important thing on there is going to be the economics. Does all these other things when we put them together, are they able to generate an income for a family to be happy, for a business to be successful and along these lines. So we're going to be talking about these each week, but remember how are we going to be tying these together?

Dr. Hamilton: What I wanted to throw up here is that we may have a lot of participants or students from different areas of the state. They may be from different areas of the United States and I just wanted to bring this up is that in Missouri we basically have two halves of the state, the North half and the South half. From I70 North we have what we say winter and from I70 South well, we kind of play around with it a little bit. That has a huge impact on the type of forages we can plant. That has a huge impact on the type of infrastructure we may or may not have. Flip it around. We've got the Western side and the Eastern side. Again, different soil types going on, water availability and then you could even break it down into smaller, smaller type areas.

Dr. Hamilton: Where, this area here may be if you're wanting to access groundwater, you may have to be checking to find out what the mineralization of the water is. Is it high in sulfur? Is it higher in salts? And how's that going to impact water intake for the cows or if you're trying to do irrigation or if you come over here, you've got tons of water because of the Mississippi laying here and it may be only a hundred feet at your feet versus if you come over here just South of this area, we have tons of water as well, but we have to go down maybe over a 1,000 foot, 1,500 feet to access that water.

Dr. Hamilton: So you can see just the state of Missouri has a lot of different diverse things going on. What kind of forges you can plant, what kind of infrastructure do you have? What's your water accessibility? Now think about this on the scale of the United States and you've got your Southern tier States that are going to be growing a lot, probably more C4 type forages. There will be some C3. What I mean by that is a C4 is going to be your warm season grasses and your C3s are going to be your cool seasons.

Dr. Hamilton: You go out there to the Northwest, Oregon, California, Washington area, not the typical continental climate that you're going to have in the middle of the nation. The different forges that may be able to grow out there conversely. Their temperate climate, what's the infrastructure going to be needed out there? And then you go to your Northern tier States. Again, probably different forage is probably extremely different infrastructure may be needed. I don't know. It all depends again on the goals and objectives and scale. And then lastly you look at kind of the fescue belt area, Missouri, Kentucky, Tennessee, Arkansas, Mississippi in there, and what are the forges going to be there? So you could have all kinds of different systems in different places in the United States. So again, if you're not from Missouri and you're in a different state, be looking at the concepts, be looking at how does that, what they're saying that probably is more Missouri like, how does it fit where I'm at? Maybe I can't grow X forage but I can grow Y and so how am I going to manage that to fit my system?

Dr. Hamilton: One of the things you also as you work with these types of systems and even in confinement is a lot of times folks get caught up in scale and this is a 2,000 cow pasture-based dairy that I've worked with. A 1,250 cow dairy pasture, 700 cows, 500 cows, 400 cows, 350 cows and a 100 cows.

Dr. Hamilton: And the question I have was what do they have in common? And you can see there they've got cows, they've got land, they've got infrastructure, they have people and they have forges, they have grass. But the big thing that all those farms no matter what they were, that 100 cow dairy all the way up to the 2,000 cow is they had a systems approach and they tried to design that to fit what their goals, their objectives and what they wanted their success to be. So begin as we go through this, we may be talking genetics and strictly genetics. We relate trying to figure out how does that fit me, how does that work in the rest of my system? Or if we're talking forages again, how does that fit me? I'm in Georgia, how does that work in Georgia? Or I'm in Washington state or I'm in upper state New York or Minnesota. How does that fit?

Dr. Hamilton: And I just wanted to throw this up and I believe you'll be covering this later in some of the other lectures, but just this is generalities. And I know some of you are going to be looking at, well my cows that size and I get a lot more milk. I agree. But what I'm trying to get at is generalities. So you may have different types of grazers all the way down here to the nongrazer that's confinement and the person here that is pretty much a confinement but what they're trying to do is reduce feed costs and be able to graze when they can. And when they can't they're going to be feeding a full TMR to the cows. And typically what you see on these systems, again in general is cow sizes differ. The more peers, the more grass we want in the cow, the smaller, more moderate we want the animal.

Dr. Hamilton: And the more that we're trying to bring the feed to her and the more milk production we're trying to go out, you're going to see the cow size gain increase. Same thing with the amount of milk that you're looking at and this is just breaking it down on an average of 305 days. Their intakes, the amount of grain that they may or may not be feeding, and then you get them out of forge. Now remember this forge down here is probably going to be alfalfa and corn silage in general. So I just want you to be looking at the parameters of the different systems and again, looking at where do I fit on that and how am I the same and how am I different? And that may be a great discussion to have with the instructors as we go through this of where do you fit into these systems?

Dr. Hamilton: All right. Let's just go through some pictures and have some brief discussion on type of systems. And again, what I'm trying to do is just trying to get you to open your mind and be thinking of how all does this fit the cows horses for courses, what kind of cow do I need to fit the kind of system that I have? Are my cows only halving to walk three or 400 yards because I got a small system and my dairy barns in the middle and I've got a really nice grazing system there that lays out where my cows don't have to walk a lot or I'm a larger scale system and my cows may have to walk one, two, three miles.

Dr. Hamilton: So is there a difference in the cow that we need to have there? Maybe it's that Holstein Friesian type, a crossbred of some sort. The cow you have no idea what her background is, but she's fertile. She breeds back and she can walk. The Jersey cow and then your prototypical crossbred, your Holstein Friesian, your Friesian Jersey type cross. Where is your system? What are your goals? And you may have different breeds that fit in that as well. Is it a three way cross or a two way cross and you'll get into that genetics. But how does it fit and how does it fit your forward system and your repro system and all else? And like I said, lastly is it economics?

Dr. Hamilton: Remember our number one goal is grass, is forage, is pasture and are we able to get this kind of intake into the cows? This is the amount of pasture that a cow would consume every 24 hours. So this is what we're trying to get at is, well, what's our forage management going to be? What are our forge species? And the keys to that management, kind of the diamond here that I've got here and in green we're saying this is the pasture management and what drives that part? Growth rate. Well that's pounds of dry matter mass grown per acre per day.

Dr. Hamilton: Your average cover is the average amount of forage mass per acre across all paddocks. So that's your inventory and then your feed demand. How much pasture do I need to grow to match my feed demand and feed demand's going to be the intake that you expect the cows to eat, consume. So these three things will drive pasture management. As you go down to the bottom half of the diamond, again, the pasture management, what were my pregrazing covers? What was my postgrazing or my residuals? What did they leave behind? And with those two you can predict or estimate dry matter intake for that group of cows. And is that meeting my pasture management goals? And we'll get into this at later stages.

Dr. Hamilton: Are you using a feed budget? Where you're looking at here are the growth rates for annual rye grass or Bermuda grass or what have you and the number of acres and that comes down here and says this is the amount of pasture that we have available per day per cow and this is the amount of pasture that we're going to feed. It gives you an estimate. It gives you a budget. It gives you a plan. Are you using these types of things in your system?

Dr. Hamilton: Forage management styles and this is always a real fun one. Are you one of the tight grazers? So where you are going be taking pasture down to one to two inches on a system similar to that or are you going to be more tall type grazing? None of them are right and none of them are wrong. But again, I want you to be thinking about the systems and how they work. Maybe on the tall type you've got more jointed type plants and on the short type or the tighter grazing forage is more perennial rye grass or something along those lines. Trying to match the physiological state of the plant with your grazing management. And again, just trying to open some thinking here as we go through each of the lectures or are you one that's going to graze based off leaf stage.

Dr. Hamilton: For perennial rye grass and fescue you need to be grazing in that two-and-a-half to at least three leaf stage. Other species may be different. And again, are you managing off that and is that part of your management practice. Your forage types. What's going to work for you? Here this individual is feeding turnips to fill a gap when none of the other forges were growing well or using rape. Alfalfa. Is that a part of the system that might work? In your area, Bermuda grass, corn grazing maze, sedan, millet, cool or warm season annuals. How do they fit or do they not fit in your system or are you one that likes to experiment and have millet, corn, soybeans in a mix. And again, trying to meet demand in an area that other forges may not be growing. How do they fit? Lagoons or are you a straight grass type grazer?

Dr. Hamilton: Again, nothing wrong, nothing right. Just trying to open some eyes, open some thinking. But the big thing is measure, monitor, manage. And as I've told some of my producers that I work with, if you didn't write it down, it didn't happen. And so a lot of you may not have computer systems or along these lines say, well we don't do that, but I bet you do, but you do it in your head and that's okay. Writing it down makes it a little better because it makes recollection easier. But by measuring, it allows you to monitor and that allows you to manage. That allows you to predict ahead, make estimates. Well we're going to run out of pasture in 30 days if it doesn't rain. So what are we going to do?

Dr. Hamilton: Are we going to try to push it a little further or are we going to take everything we can and then feed supplements later on. Again, just trying to open up some to discussion. Ultimate thing is that we want, we always in our goal is we always want adequate or optimum pasture intake going into the cow. Kind of shifting gears a little bit, kind of looking more at infrastructure or herd health along these lines, but calf raring. Are we going to rear them as individuals in hutches? Are we going to raise them on mob type feeders such as this where we're calving a lot of cows at once? Showing that as a little bit more detail there. On a smaller scale but we still want to be mob feeding.

Dr. Hamilton: How are we going to keep our cows comfortable? What's going to be some of the methodologies there? Are we going to have cooling type ponds or are we going to be more hybrid and we have bedded packs or again, are we further hybrid and we've got free stalls that when it's really hot outside we can bring the cows in and feed them a TMR or are we going to use nature? The natural shade of trees trying to keep the cows cool. Are we going to use artificial shade like on these three or four pictures here. Where actually in this one, this predict particular producer has sprinklers under the shade on a timer. Different ways of managing heat stress or if you have center pivot irrigation or other types of irrigation, are you going to be capable of using that to cool the cows?

Dr. Hamilton: Supplemental feeding and again, remember those different types of producers we talked about. The purest all the way to confinement, but how are we going to get feed into the cows when pasture is limited or is nonexistent because we're in a drought or we're in a period of non-growth? Again, is it going to be going back to that TMR freestyle type barn or is it going to be feeding it actually out on the pasture or is it going to be trying to simplify things and just feed them in the milk shed while they're being milked or going to this extreme of big feed sheds. Where again, two purposes here. One, you can provide feed to the cows when it's short and you can also use this as a cow comfort type area. You're milking facilities. The basic walkthrough, more than likely on smaller scale operations, but still a very functional type barn. Robotics. How does that fit your system? Rotary type systems.

Dr. Hamilton: Rapid exit herringbones or parallels, do they fit or then just your basic bare bones type parabone, which is a swing over. Again, what fits your system? How does it meet your objectives and does it meet your goals? Holding pens. If you're in the design stage and you're going to be building new a new barn, are they going to be round? Are they going to be rectangular.

Dr. Hamilton: Supplemental forges. So let's say you are going to be the one that's going to, you know you're always going to have to have supplemental forge. How are we going to store it? Is it going to be in bags, is it going to be in marshmallows, is it going to be in uprights, is it going to be in pits? These are just all things I want you to be thinking about as we go through all these different things that we're talking about. Lane race designs. Building roads to get your cows to and from the pastures or are we going to have small lanes. Water systems with the septic tank type water tanks, all the way to that massive tire that a lot of guys are able to get for free to put into their systems. What I'm trying to get across is no matter what we're doing on this, whether it's the genetics, it's the forage management, it's the nutrition, it's their economics.

Dr. Hamilton: Let's try to keep things simple and something we've kind of coined as the easy forge systems. We always want it to be environmental. We want it to be environmentally sound. We don't want to affect the environment. We want to leave the land better than the way we gained it. Is it agronomically makes sense? Am I trying to grow a warm season grass in upper part of Minnesota, that's probably not going to be one that may not work up there. And conversely, are we going to try to bring a grass that was adapted to Northern Minnesota and take it all the way into Florida? So are we using good agronomic practices? Are we taking care of the soil? Are we properly fertilizing? These sorts of things. Keep it simple. I can remember as a kid and we had trucks, we could work on them ourselves.

Dr. Hamilton: And now with the trucks we have, I have no idea what I'm looking at under the hood. Forage systems are the same. So as you'd be looking at it, it's really fun to keep adding things and this and that but keeping them simple makes it a lot easier in managing. And the big thing is this is your system. It's not mine. It's not the banks. It's not the consultants. It's not the nutritionist. You're going to get a lot of feedback from people when you're designing systems, but it's yours and it's got to be what makes you happy.

Dr. Hamilton: So lastly, what I want you guys to do, because this helps me understand and make sure that you're getting through Blackboard and you're getting through the Tegrity lessons. So email at this address, hamiltonsa@missouri.edu and send me a message. Cows are cool. Grass is green. Milk is great or something along those lines. And all it does is it just gives me the information that says yes, they're able to get into Blackboard. Yes, they were able to get into Tegrity. They were able to listen to this introduction on what we're going to be covering over the next eight weeks. And I know everything's a go for us. So, if you would please send me that email.

Dr. Hamilton: Again, I welcome you to the class. Again, I will emphasize bring discussion to those synchronous sessions. Bring questions, challenge the instructors. If you don't agree with something, say, "Hey, I think that's wrong. I think it needs to be X." Bring that discussion, defend it, get a conversation going with everybody involved. Our number one goal in this class is yes to help you guys and provide information, but we learned too. This is a co-learner type of environment and we learn just as much from our producers and our students and we're able to bring that into our lectures and bring that into our presentations. So if you see something that you go, I'm not so sure about that, bring it to the discussion, send an email to the professor. We welcome that. We welcome that discussion. So again, thanks for taking the class and we'll be seeing you throughout the next eight weeks. And have a good day. Thank you.